DOMUS
PROJECT

by Werner Maresta

MASTER BUILDER'S SECRET DIARY VOL. 1

THE BASEMENT

FROM THE BASE TO THE VAULTS

First revised edition 10/ 2021

This book collects articles originally published on the Patreon page “***Domus project, a miniature building stone by stone***” .

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Introduction

WHAT is the Domus project?

An architectural model? A doll house? A diorama? "Art"?

Although a lot of water passed under the bridge since I started the construction, none of those options leaves me totally satisfied and no matter how hard I try, I can't answer fully and concisely. Indeed, if I have the opportunity, I overwhelm my interlocutor with an avalanche of words that often, if not associated with pictures, make more confusion than anything else. Usually, after showing a wide smile for the interest shown in my project, I start to rattle off the official definition:

"The Domus project is the construction in scale of an imaginary Genoese palace from the 14th century, built according to real construction techniques and with the use of natural materials."

Then, seeing the unfortunate person oscillate between confident admiration and bewilderment, I add: "Obviously, everything is built brick by brick and stone by stone."

Obviously.

Luckily it's enough to suggest him/her to type the blog address on a smartphone, and all those vain words start to make sense as if by magic.

"But how long does it take you to make a piece like that?"

"I don't know, it depends ... I work on it in my free time. I started ten years ago ... »

I can almost feel the weight of her gaze as she tries to understand if I'm serious.

"Wow, I wonder how much it weighs ..."

"Around 35Kg now, but I guess it will reach 60 at least."

Then I look forward to the inevitable question.

"But why are you doing this?"

While I mumble disconnected sentences in search of a socially acceptable answer, her finger keep scrolling through the pictures as in a sort of frenzy, until an intuition makes its way into her mind:

«You're a fool!»

Ok, at this point there's nothing else to add.

But let's take a step back and see how it all began...

In 2009 I had just completed a previous project (the copy of a Roman mosaic with ceramic scraps) which lasted four years. Taking advantage of the digital switchover, I had abandoned the insane habit of watching TV, so I found myself with a fair amount of free time that I decided to invest in an old dream: the construction of a miniature building.

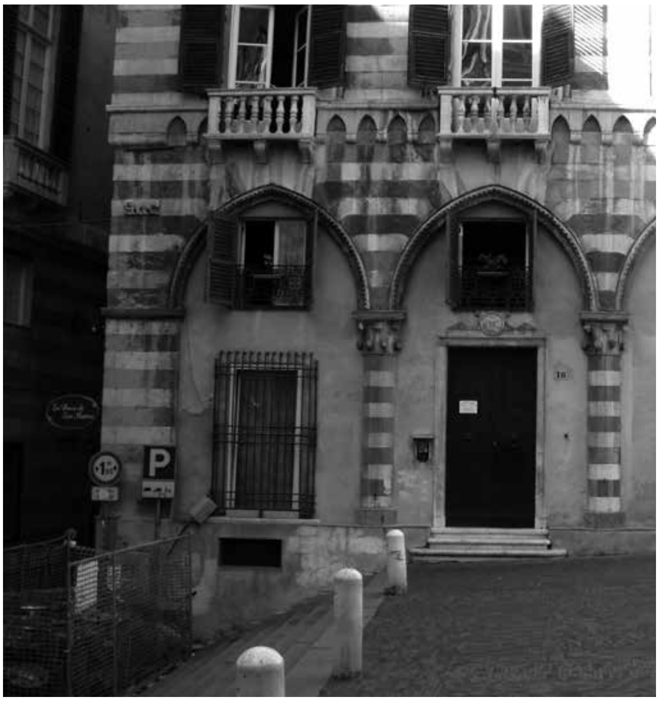
Genoa in the 16th century (engraving, Nuremberg chronicles, around 1490).

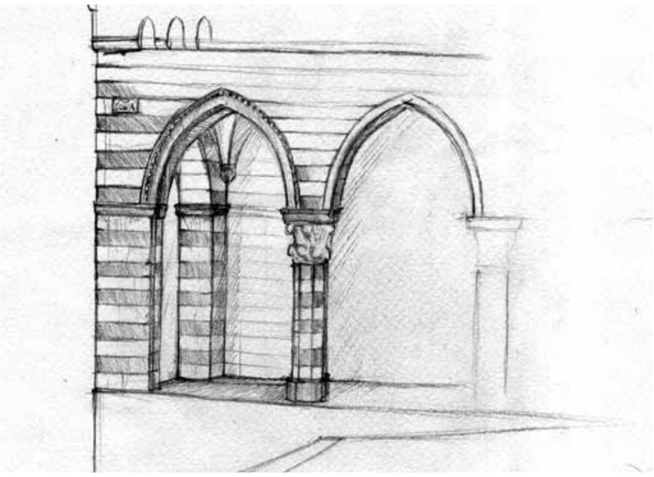
During the making of the mosaic, I had come across the processing waste of a marble worker, collecting them without knowing for what. Later, placing side by side the thin strips of white marble and gray slate, I began to glimpse something. It was little more than a fantasy, fueled by the observation of what remains of the sumptuous palaces of medieval Genoa. A rich and unknown past also for many Genoese that resurfaces from under the modern plaster, bringing to view the large arches of merchant loggias occluded for centuries, elegant three-light windows and two-colored facades in precious stone.

I often found myself observing those structures, imagining what they looked like originally, as evidenced by the pencil sketch that I report on this page, made during a drawing session with my high school class in 1993. The Domus project was still far from coming, but the seed was planted. It would take the scraps of some potential gravestone to make it sprout!

After the initial inspiration, for a while I dedicated myself to collect documentation on medieval architecture, researching on the internet, in the library, taking pictures on the streets. After reading several books and even following video courses on architecture, construction techniques and medieval history, I decided it was time to move on to practice.

The foundation stone was officially laid on my terrace in Granada in July 2009, and a few months later I opened my blog, where I started telling this mini-adventure.





Why this book?

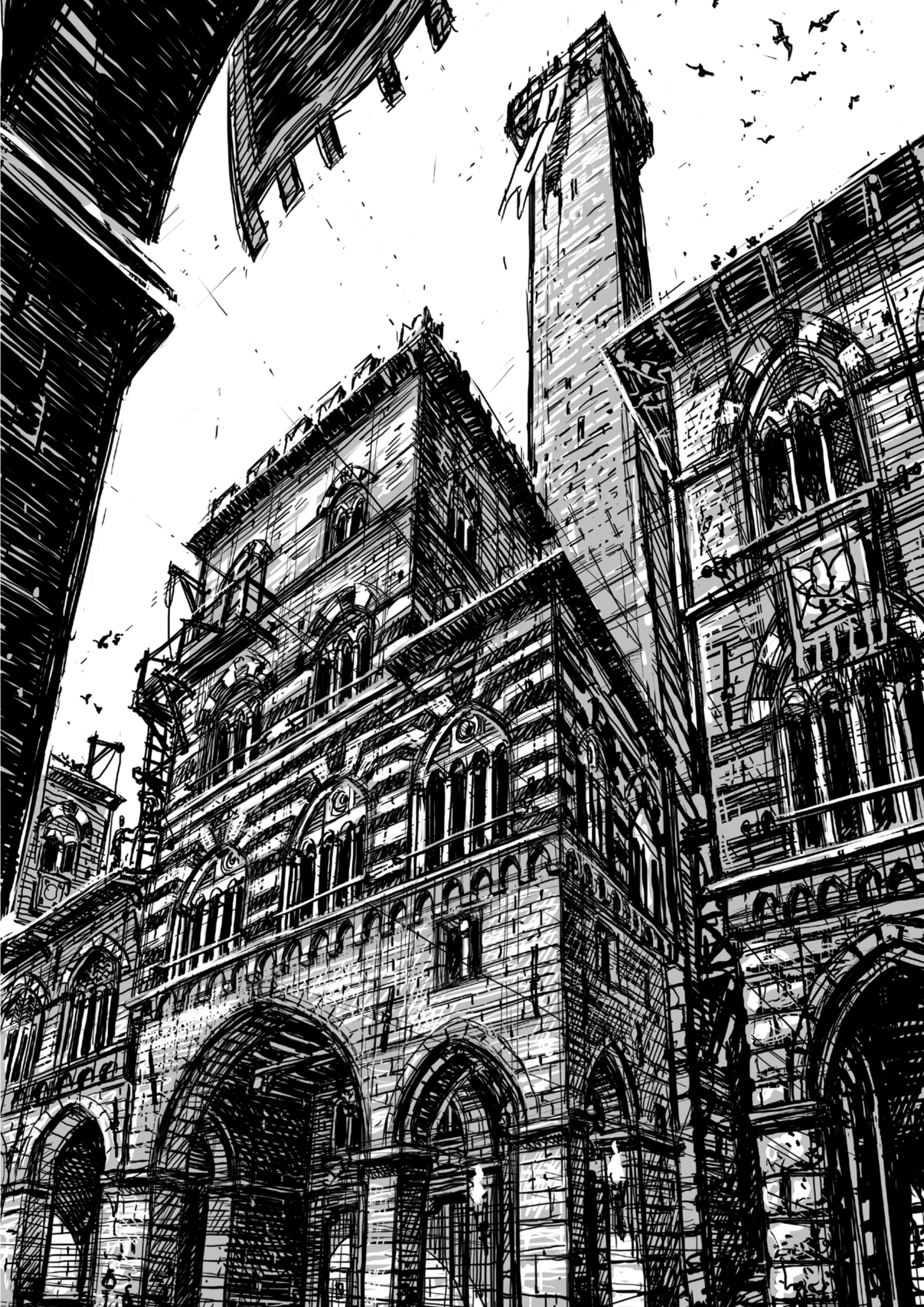
And here we are at the reason that led me to write this ebook, which traces the construction of the Domus through the pictures and articles (appropriately reworked) published on Patreon. But to better understand my intentions I think it's necessary first of all to specify what this book *is not*:

It is not a modeling manual. There are decidedly more practical and faster methods for creating architectural models for the most diverse uses, from cinematographic models to historical reconstructions, up to modules for wargame boards. It is not even a treatise on architecture, for which I wouldn't have the necessary knowledge. It is much more simply the chronological story of what I put into practice within my "construction site", including the description of the materials, the tools used, the techniques and also the errors that brought the construction to the point where it is today. In short, a sort of logbook, or as the subheading says, the ***master builder's secret diary.***

This tome is the first of a series that will end with the completion of the project, that I hope is closer in time than its beginning. Where possible I'll provide the exact measurements of the elements made in case someone wanted to follow my steps. Actually I hope that reading these pages can offer aspiring builders the necessary push to undertake their own personal project, that is why I started writing on the blog.

To conclude, as a master builder I feel authorized to give you only one piece of advice: never stop feeding your creativity, even if what you do doesn't fall into easy categories. It matters little if there's no ready label, words always come late. Ideas come first.

Werner Maresta



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Chapter 1

CONCRETE BASE

Day 1: Let's make a concrete base for the house!

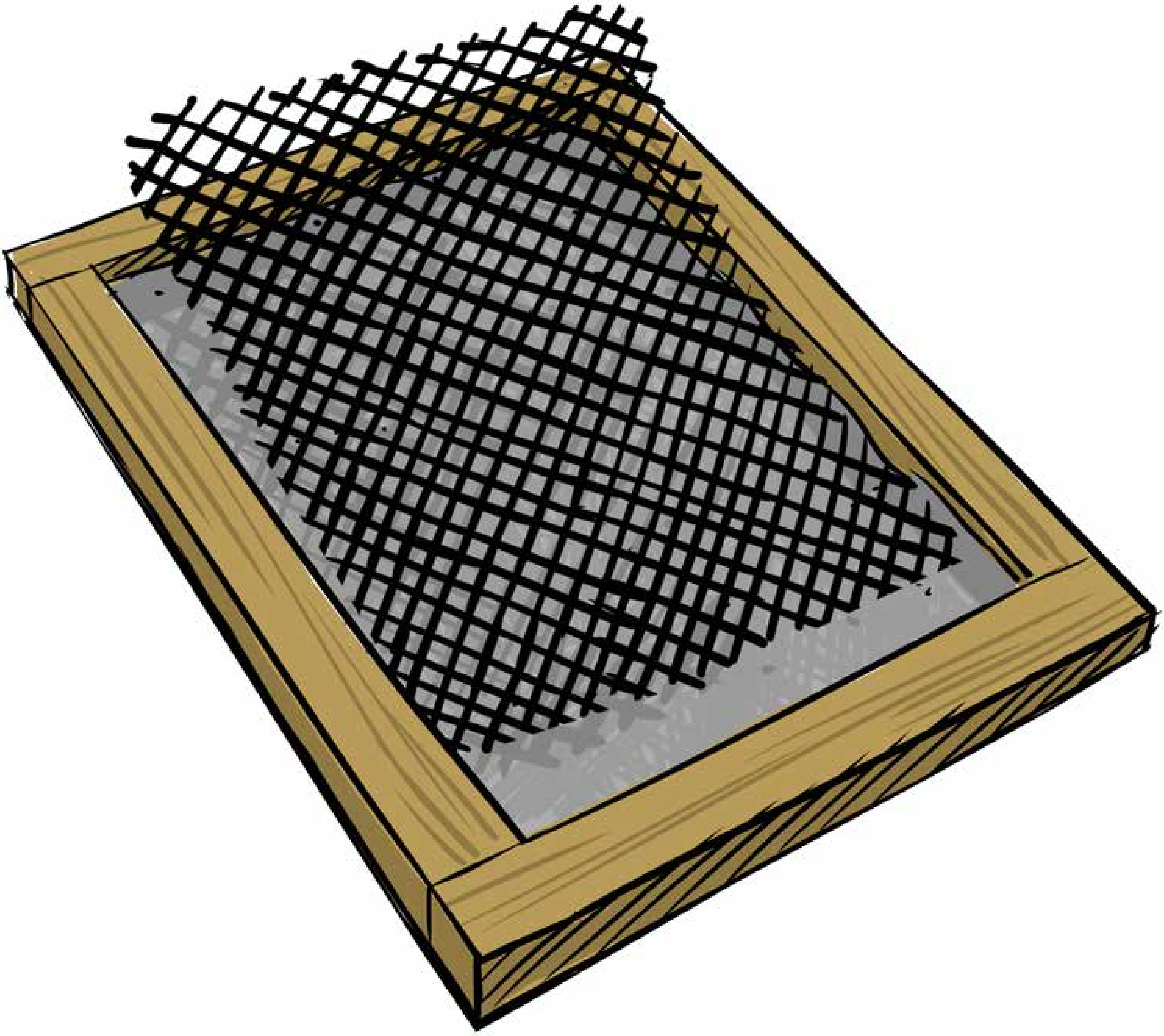
After building a wooden frame of 30 x 40 cm and preparing a smooth temporary surface with a plastic bag, I proceed to the making of the cement. I have no specific knowledge about the correct doses of sand, water and cement, so I spend some time searching on the internet, obviously finding everything and its opposite... The most common version suggests that for each part of cement I should add one of water and two of sand.

That's what I do, and then I pour it into the frame, placing a stainless wire net at half of its thickness. Then I let it dry covering everything with a wet cloth to avoid cracks.

Despite this, the result is a failure. The next day the base is dry but it crumbles on the edges with the simple touch of a finger. There is an excess of sand, I guess. False start.

I replace the frame and repeat the whole operation from the beginning, but mixing the same amount of cement and sand. This time the result is convincing and does not flake off.

And now this story can really begin ...



MATERIALS:
wooden slats, screws, cement, sand, metallic net

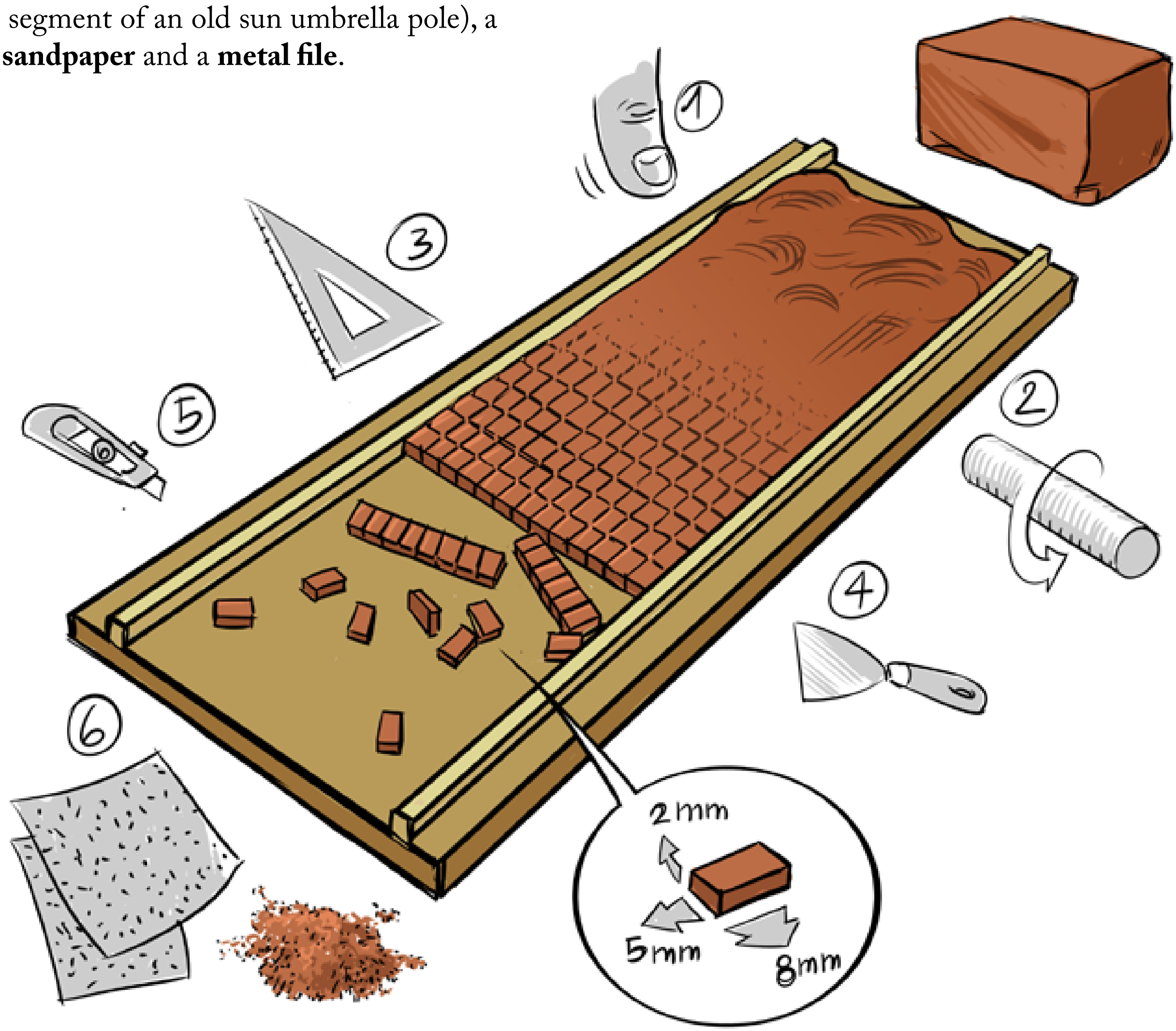
TOOLS:
saw, ruler, drill, screwdriver, spatula, sponge,
wooden spoon, scissors, plastic bag, rags

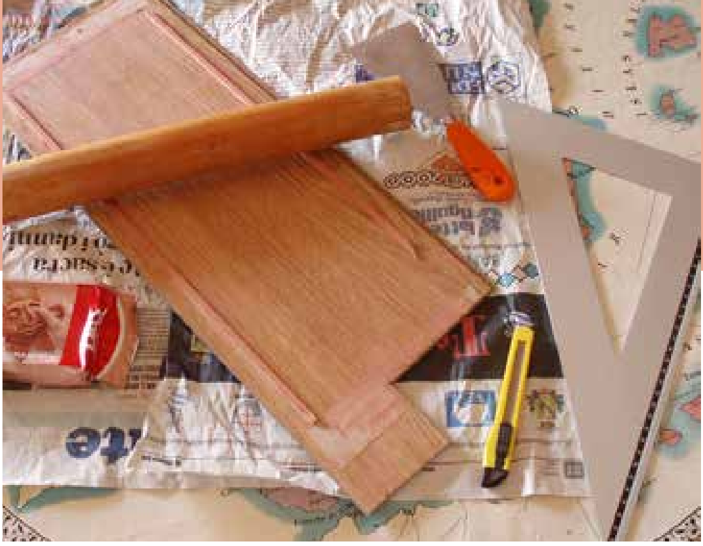
SIZE:
30 x 40 x 2 cm

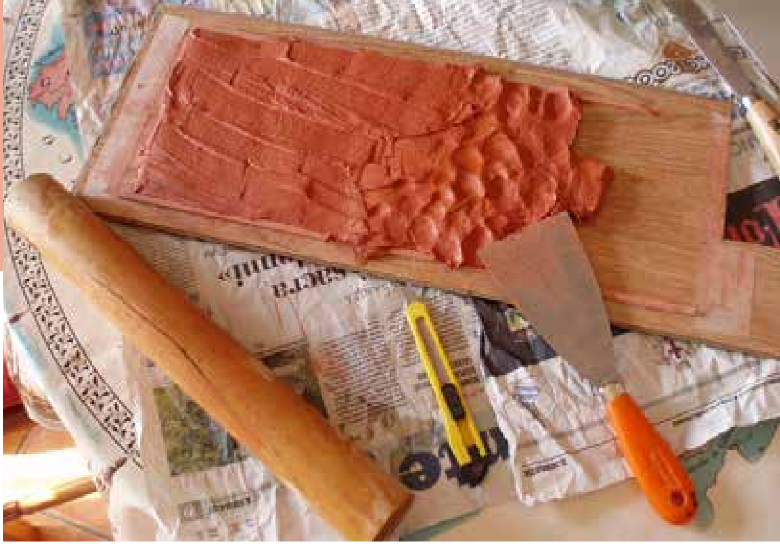
Chapter 2

Homemade miniature BRICKS with DAS CLAY

The pictures inserted in this chapter are taken from several “batches”, but I combined them in a natural sequence to show you step by step the making of my bricks, resumed in the sketch below. The raw material is **DAS clay** in *terra cotta* color. Besides this, I used some basic tools like a **square**, a **cutter,** a **slice**, a **wooden board** with two thin runners (about 0,5 cm), a **rolling pin** (actually a segment of an old sun umbrella pole), a **hand sprayer, sandpaper** and a **metal file**.

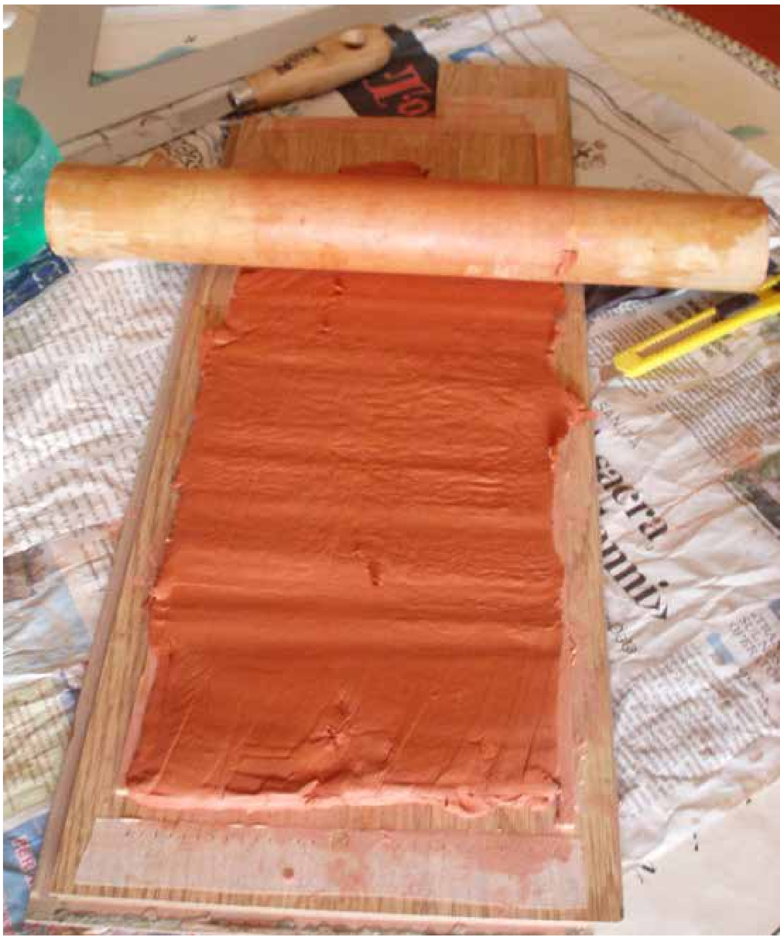


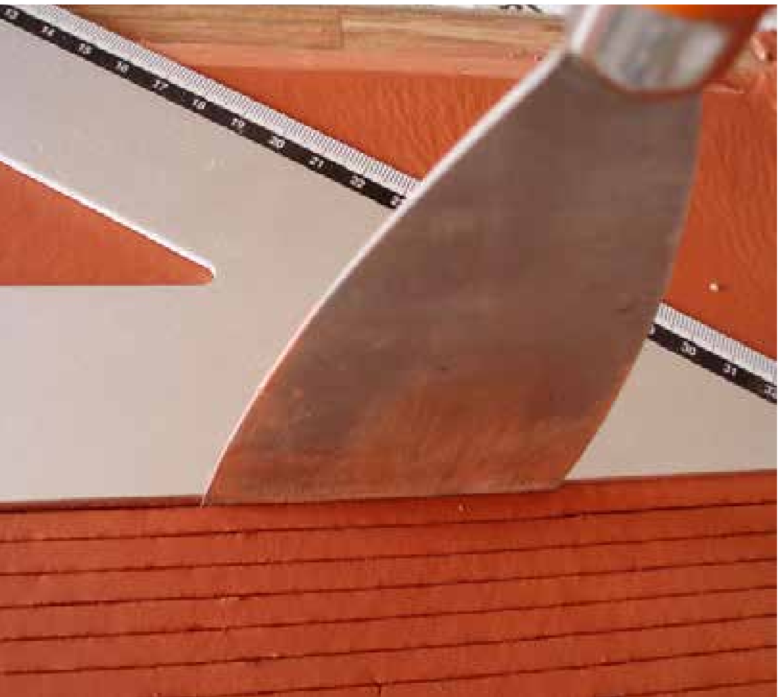


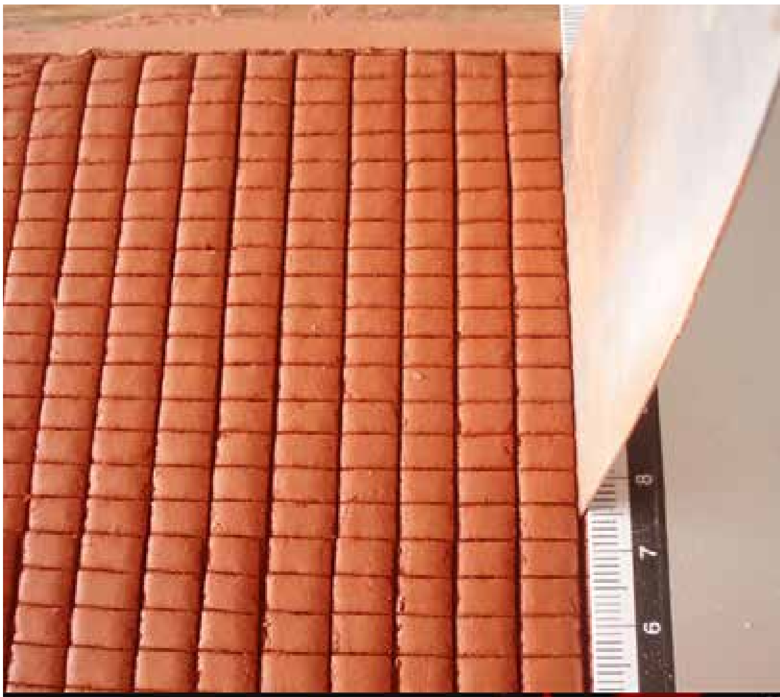


I start cutting the clay into slices and placing it on the board. Then I press it with my fingers to fill all the surface between the runners. A wet rolling pin allow me to extend the material until the surface is plain and thin enough.

The next operation is the carving of the surface using the slice. I cut horizontally the clay all along the board into strips. It is important to keep the slice perpendicular to the board an moving it







downwards and not sideways because that would alter the shape of the bricks.

After making the horizontal cutting I proceed with the vertical ones, in stripes of 8/10 millimeters, depending on my needs. Before the material is totally dry I apply a light pressure on the surface to limit the smoothness caused by the slice during the cut.

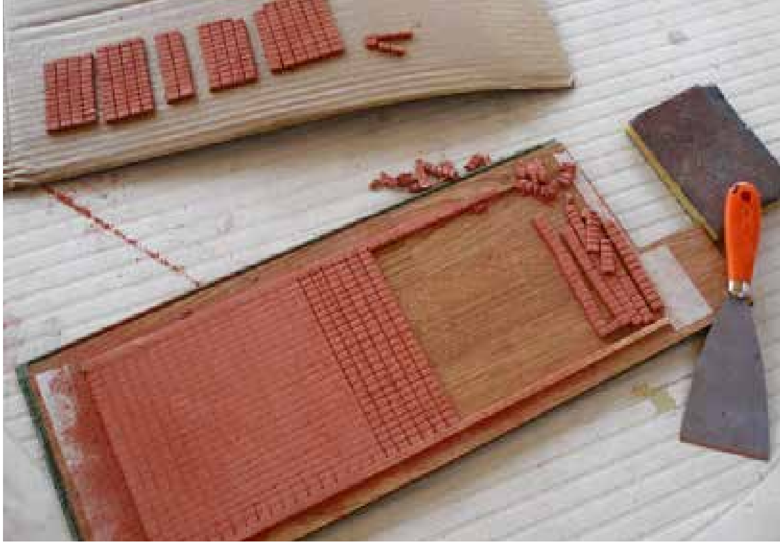
After a few hours (or the day after, in case of cold weather or moisture) I proceed to a further polishing of the surface with sandpaper. Then I check again the lines between bricks with the slice and finally I can cut off my bricks.

In this stage I try to separate the bricks in slices of at least 4 pieces. That's because the little bricks still need to be polished with a file to be finished. On a board like this you can produce more than 1300 bricks at a time, so you can see the advantage (in terms of time) to polish them in groups of 4 and not one-by-one.

The finished bricks will not be all perfectly alike. Some will be shorter, some will be thicker... Fortunately the DAS clay is an easy material to work on even when it's dry and you can modify every piece before placing it.

This feature will be very useful to build walls and vaults, where bricks does not come all in the same shape and need to be modified depending on their position.

Ok, now we have our bricks ready. It's time to build!



MATERIALS:
DAS modeling clay, water

TOOLS:
square, cutter, slice, wooden board and slats, rolling pin, hand sprayer, sandpaper, metal file, patience.

SIZE:
bricks: 5 x 8 x 2 mm
runners section: 5 x 2 mm
board available surface: 15 x 42 cm

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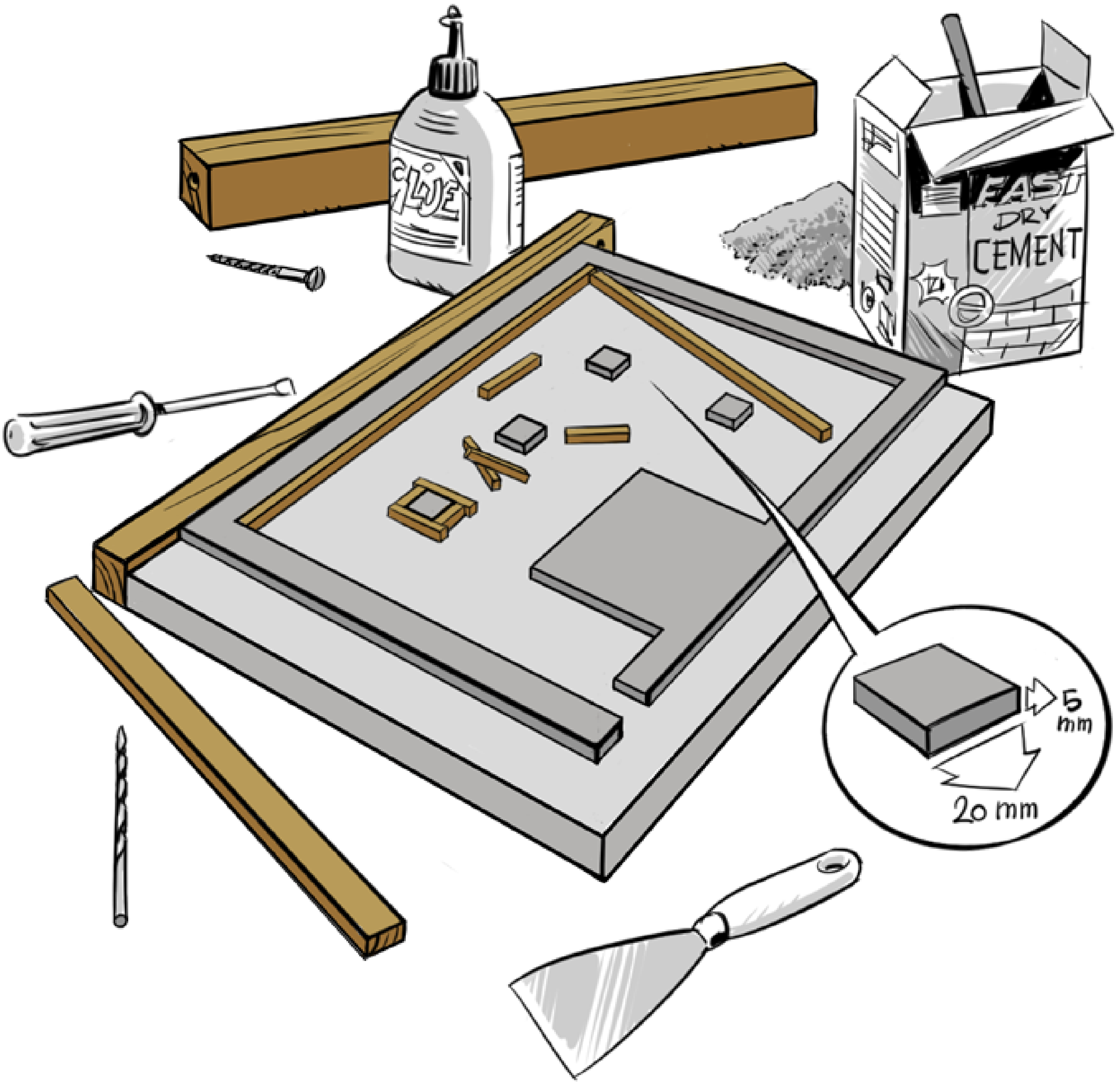
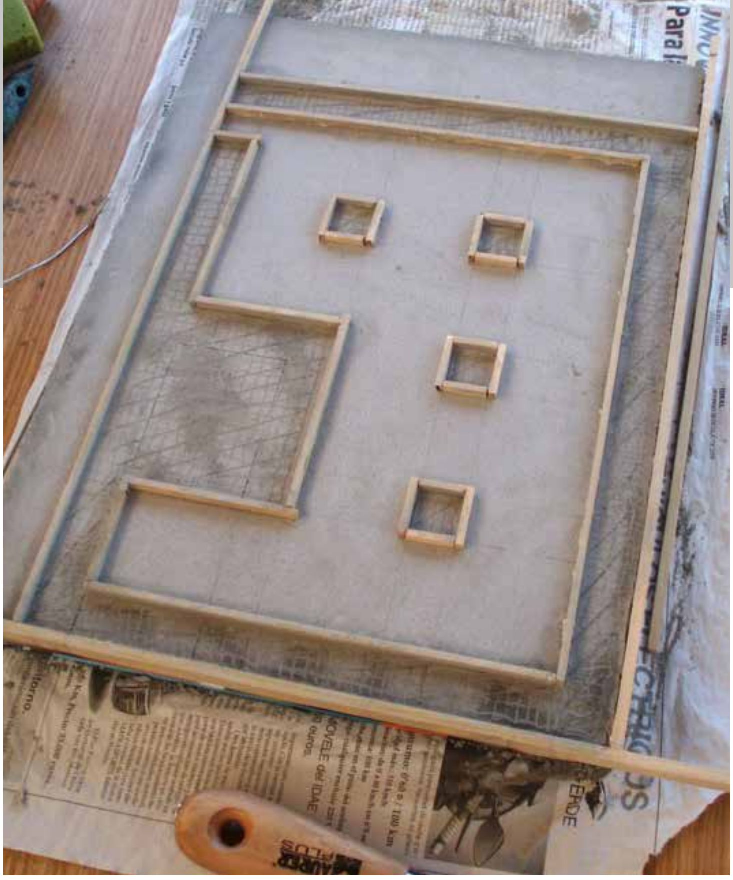
Chapter 3

FOUNDATIONS





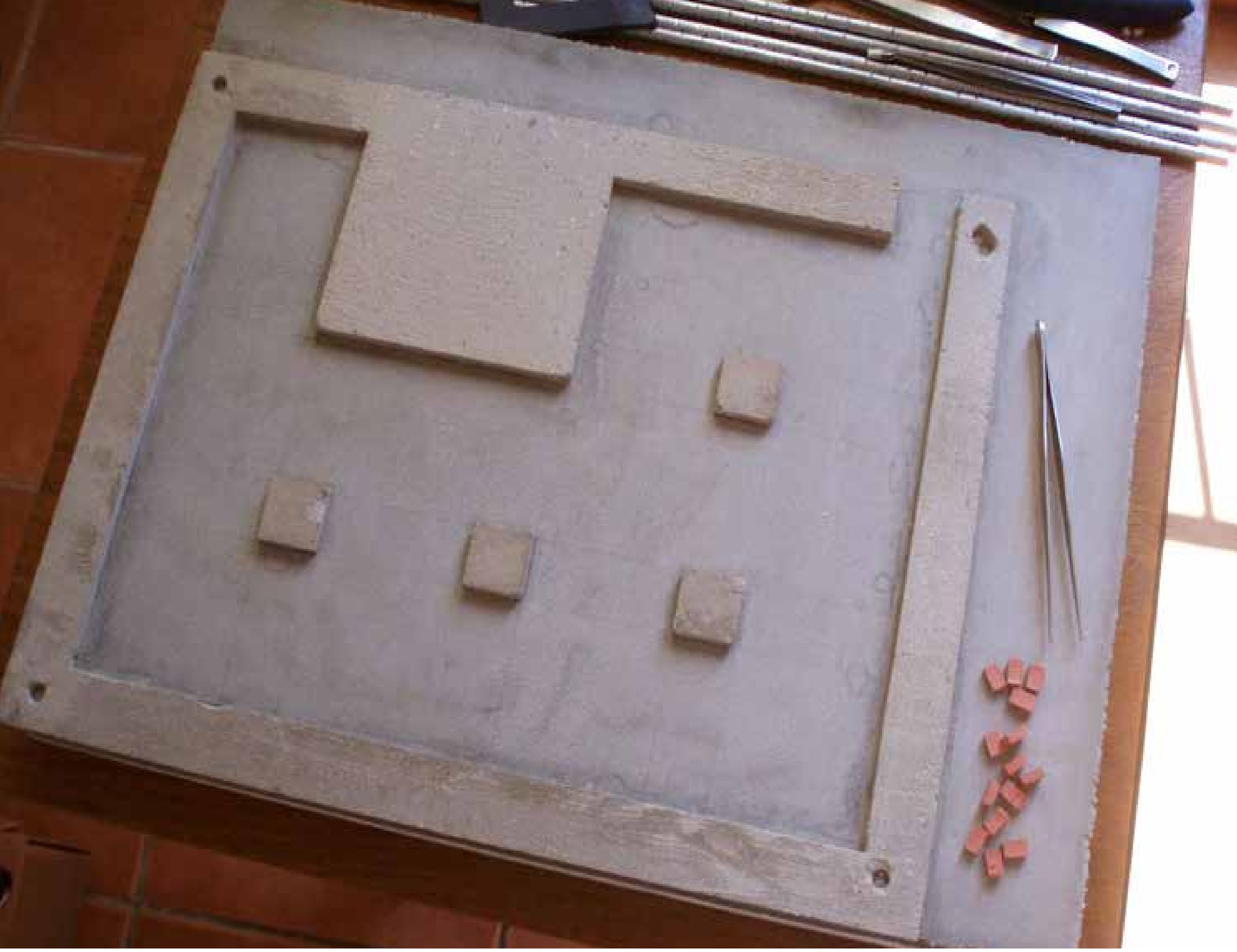
To avoid misunderstandings, let's say right away that more than real foundations this is a **thin concrete slab** placed between the previously built base and the vertical structures of the basement.

After reproducing the map on the base with a pencil, I define the areas that will be covered by walls and pillars with wooden slats.

Obviously he thickness of the slats must be the same of the bricks I'm going to use to make the floor.

To increase the grip of the cement on the smooth surface I carve a lattice on it with an awl and the Dremel tool. Then I prepare a small amount of cement and fill the molds, leveling everything with a spatula.

The next day I remove the wooden slats cleaning the base from the excess cement. I also drill four holes at the corners of the base. According to my early project they should serve as a slot for the metal reinforcement structure. Finally I'll decide not to use them, as we'll see in the next chapters.



MATERIALS:
water, cement, sand

TOOLS:
wooden slats, awl, Dremel tool with diamond point, contact glue, spatula

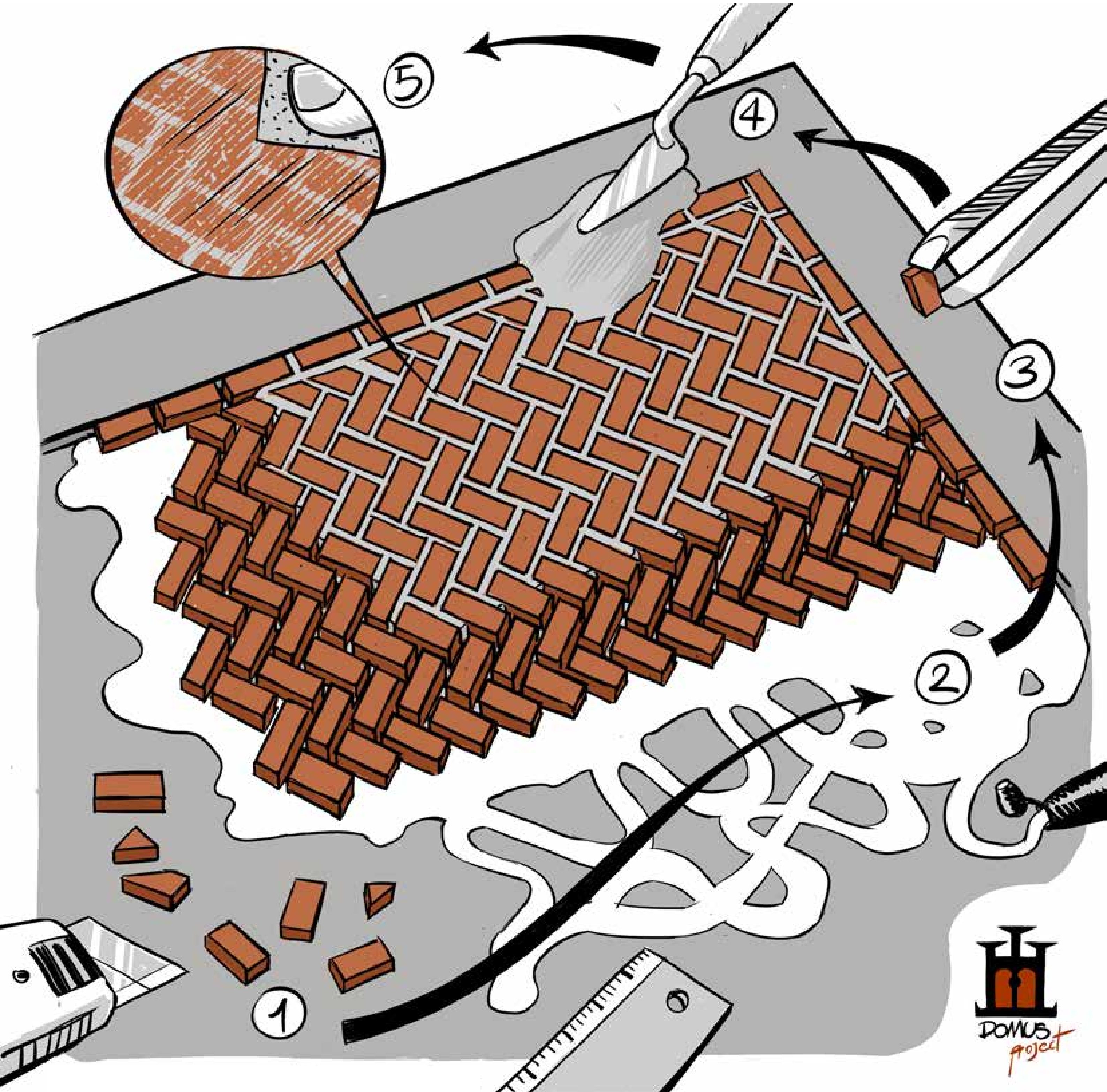
SIZE:
slats section: 5 x 5mm
width of pillars and walls: 20mm

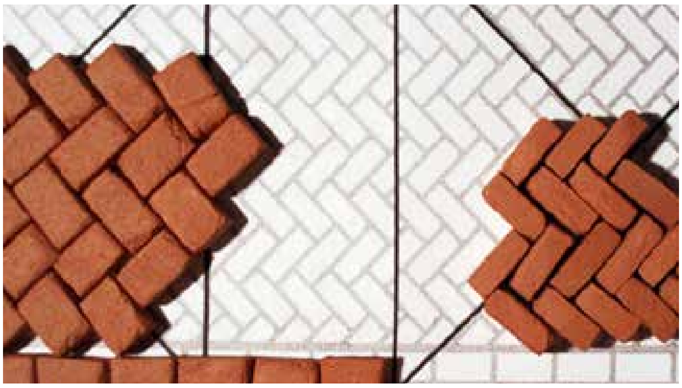
Here above you can see the result of my work: perimeter walls, pillars and stairwell of the future house are clearly outlined on the base.

Now it's time to start laying the bricks, and I've already made hundreds of them, so...

Chapter 4

HERRINGBONE BRICK FLOOR



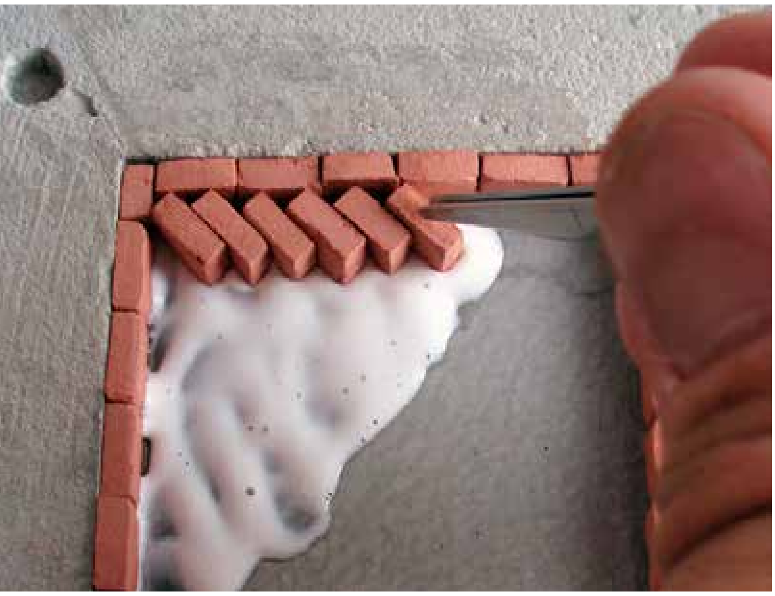


As I've said, now it's time to start laying the bricks.

I opt for the ***opus spicatum*** tecchnique, a common way to flooring in roman and medieval times. To paste the bricks on concrete I'll use a simple but very effective material: **vynil glue**. This glue looks white at first, but it turns transparent when it dries and this will avoid imperfections in case of smudges.

After running a few composition tests, I'm ready to start the real work.

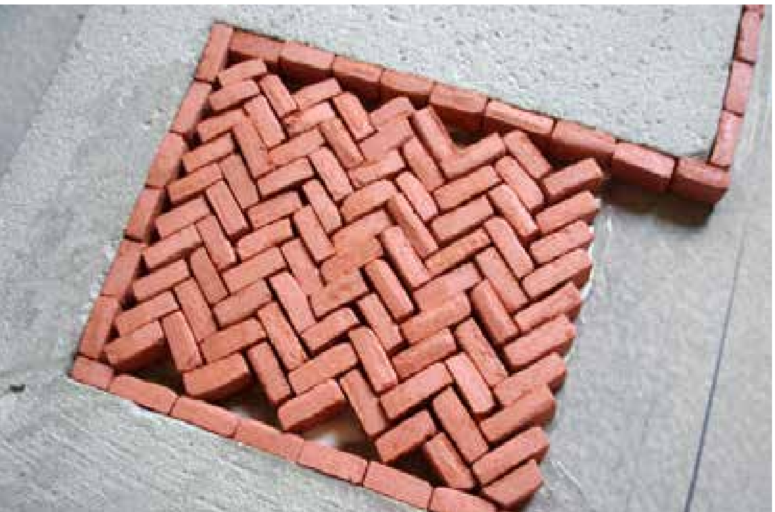
I lay a first row of bricks all along the perimeter of the basement and around the pillars, like a frame. I take care, though, to prevent glue from leaking out the joints. To make this I use a pair of tweezers, that allow me to work with a higher precision. **Warning**: these bricks are very small and working by hand could bring to a nervous breakdown in a very short time!

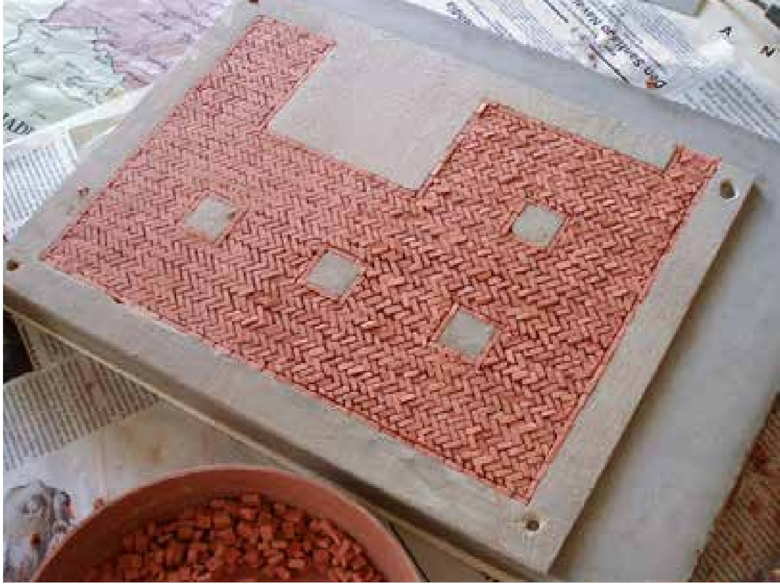


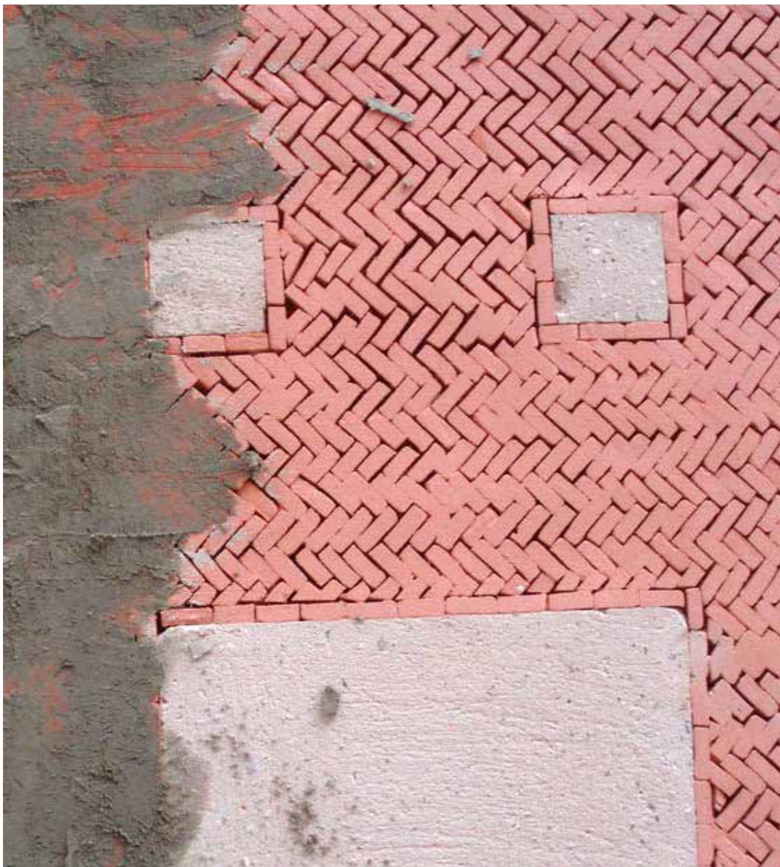
Ok, when the frame is closed, I start laying the first row of bricks at an angle of 45°, covering the base with glue little by little. When the glue is drying before time I remove it with a cutter to keep the surface plain.

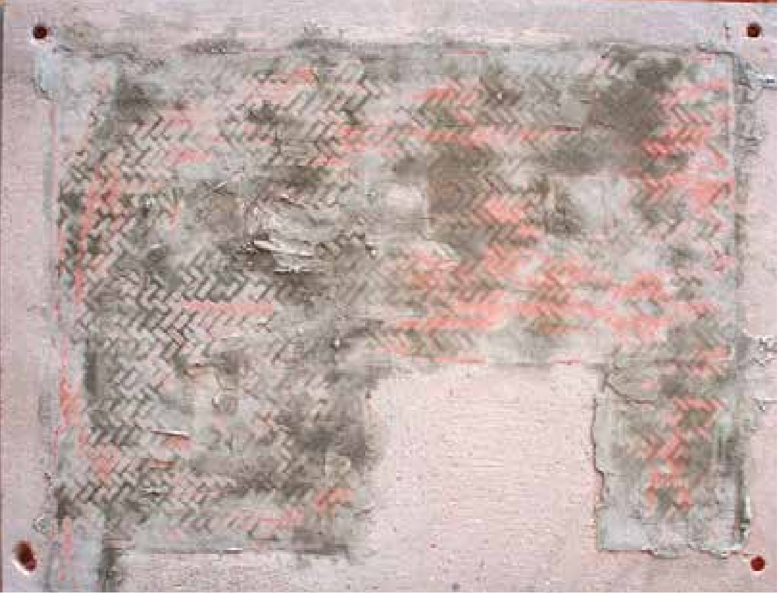
The work proceeds quickly, with the only difficulty of keeping the right direction of the "slices". Some bricks are longer than others and I need to use files before to place them. What's more, the 1300 bricks I previously made are finished when I reach half of the floor, so I need a new batch (that's a full working day moulding, drying and polishing).

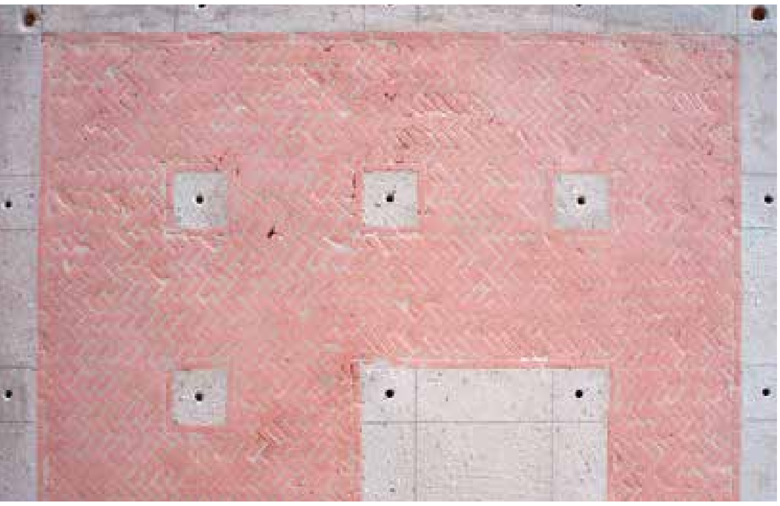
When the composition is finished I fill the empty spaces along the edge with portions of bricks and strongly polish the surface to level out the whole floor.

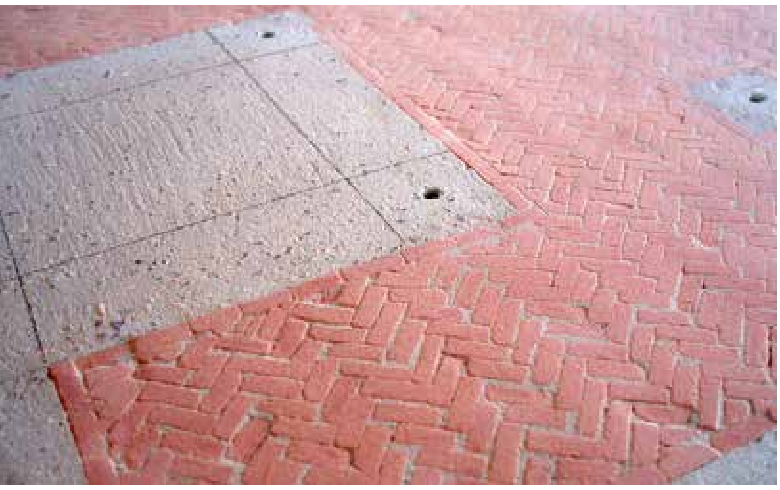


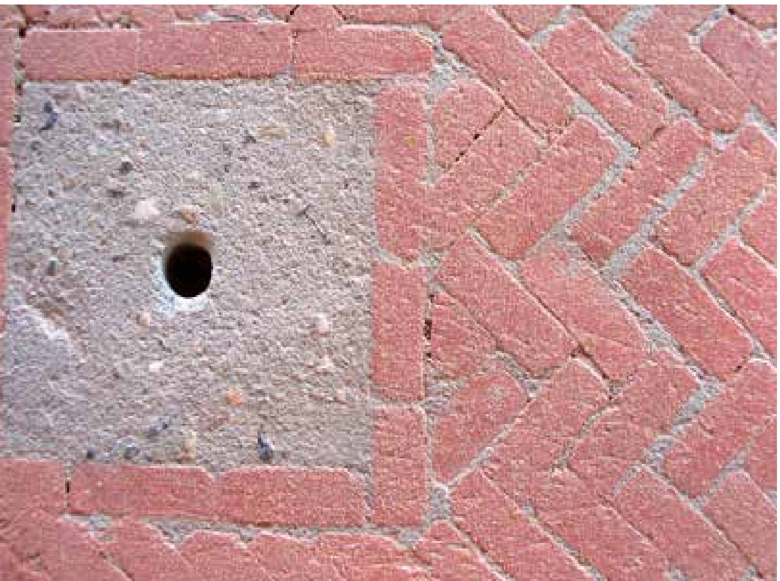












The last stage after cleaning the floor from dust (a sea of dust) is the filling of joints with concrete. This time I'll use a **quick drying cement**. It sets in 2/4 hours and I can use it without sand to get a smoother texture that will strain easily between bricks.

Now I have to wait for the cement to dry, then I'll polish the surface once again, filling the last blanks. I will also leave some bumps and imperfections here and there to make the floor look more realistic. In the pictures on the left you can see the finished floor.

One last detail: I drilled some holes in the slab to insert the wire for walls and pillars, and this will be the subject of next chapter!

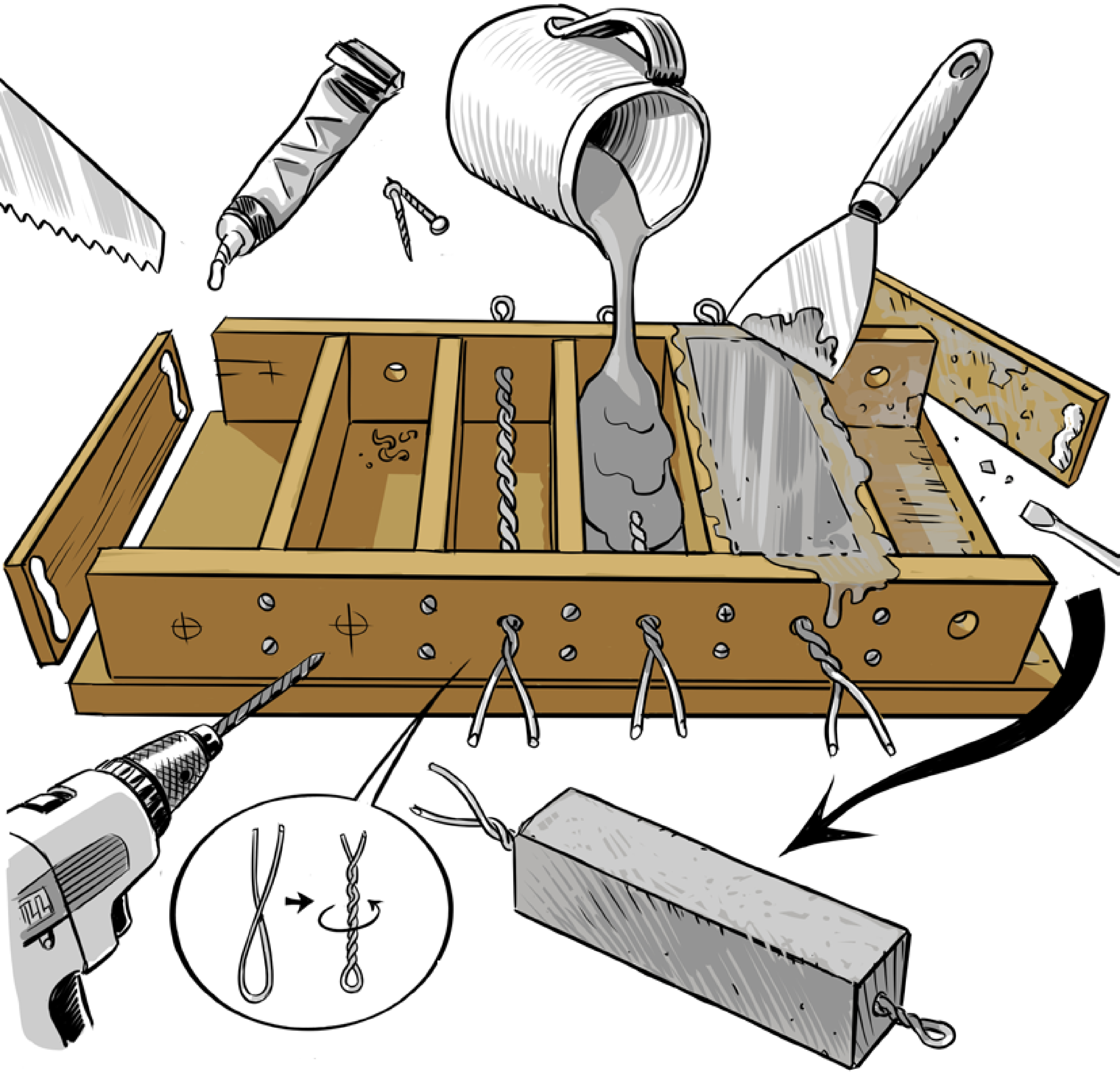
MATERIALS:
DAS bricks (see chapter 1), cement, water, vinyl glue

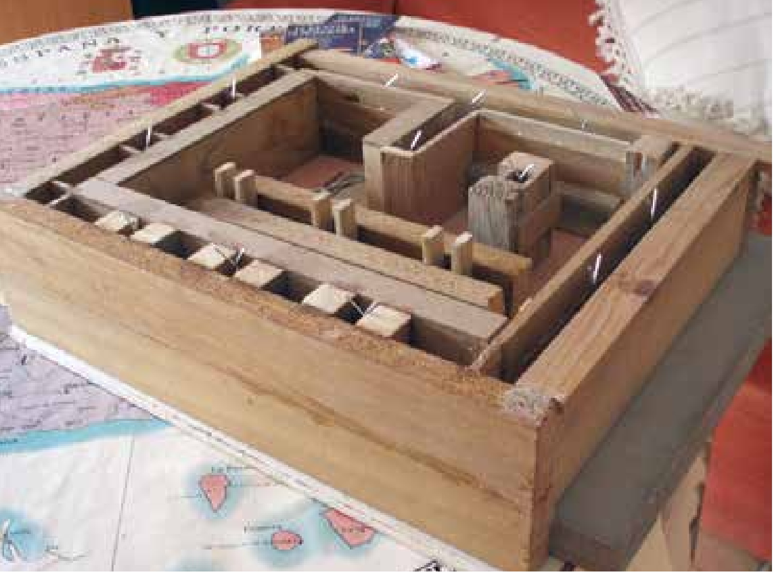
TOOLS:
square, pencil, cutter, slice, hand sprayer, sandpaper, metal file, more patience.

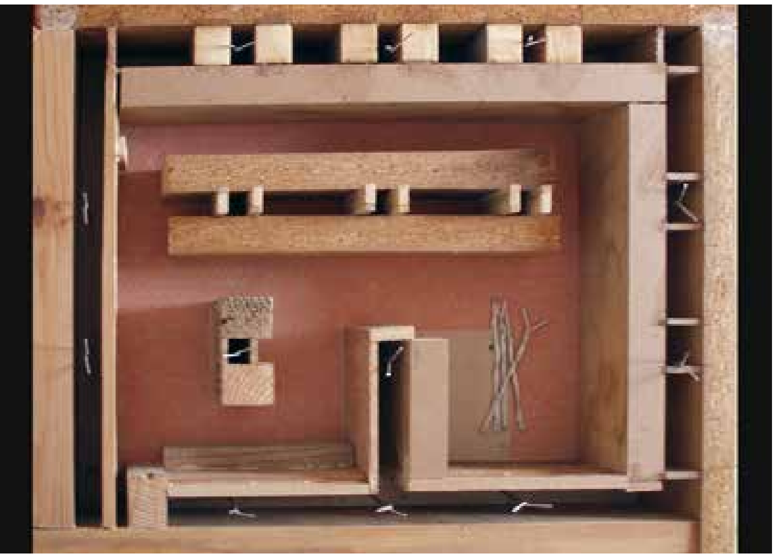
SIZE:
bricks: 5 x 8 x 2 mm

Chapter 5

REINFORCED CONCRETE STRUCTURES







With this chapter I officially launch the ***Errors*** section.

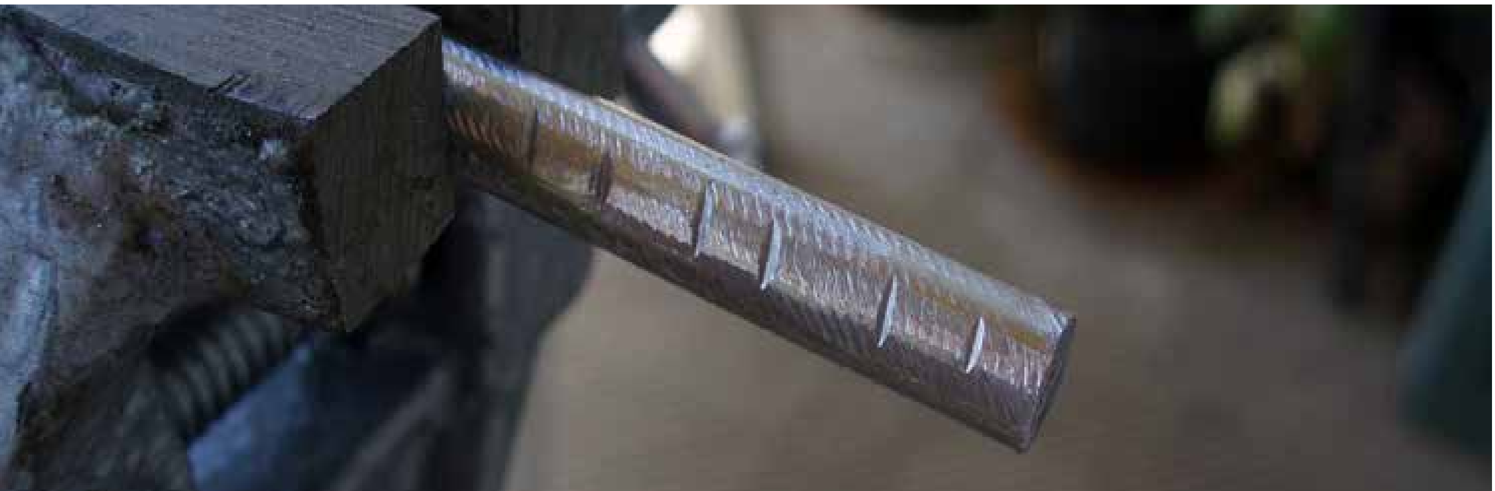
When the brick floor is finished, the construction must go on with the vertical frame. But I need to spend a few words about my decision to build a concrete frame, as this is not actually a medieval technique.

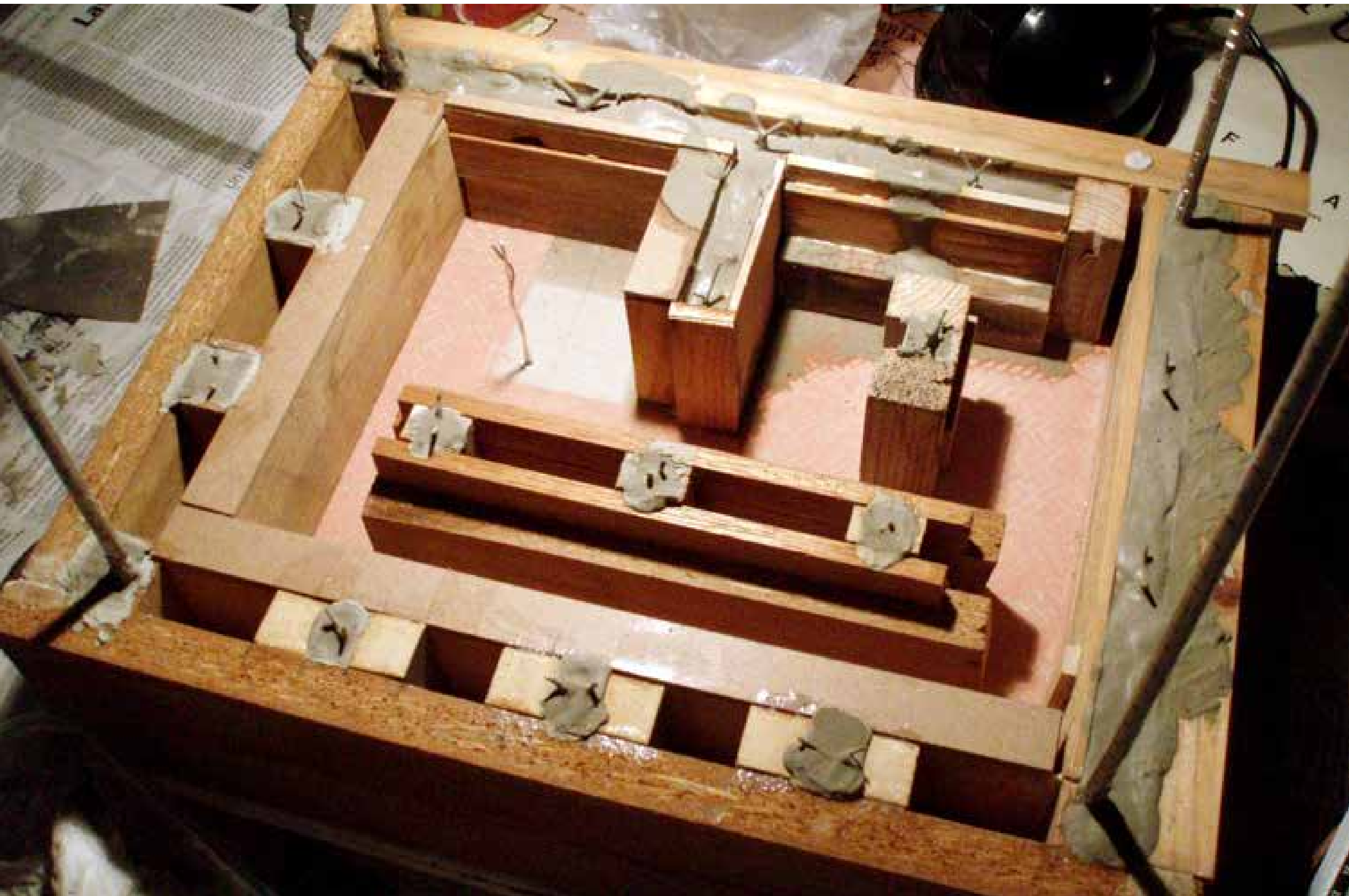
The underground cellar, which represents the basement of the house, in the real world would be surrounded by terrain (a rocky terrain in most parts of the old town of Genoa) or by the basements of other buildings. It would be thick-walled with bricks and stones, no concrete or metal wire at all. However, in my case the scale model will not not be inserted into the ground and I can't take advantage of other existing structures. It will stand alone like a tower. Moreover, the strains this structure will need to resist (relocations, strokes, etc.) are heavier than a real building have to, unless in case of earthquake or bombing. So I need an **extra-strong** structure.

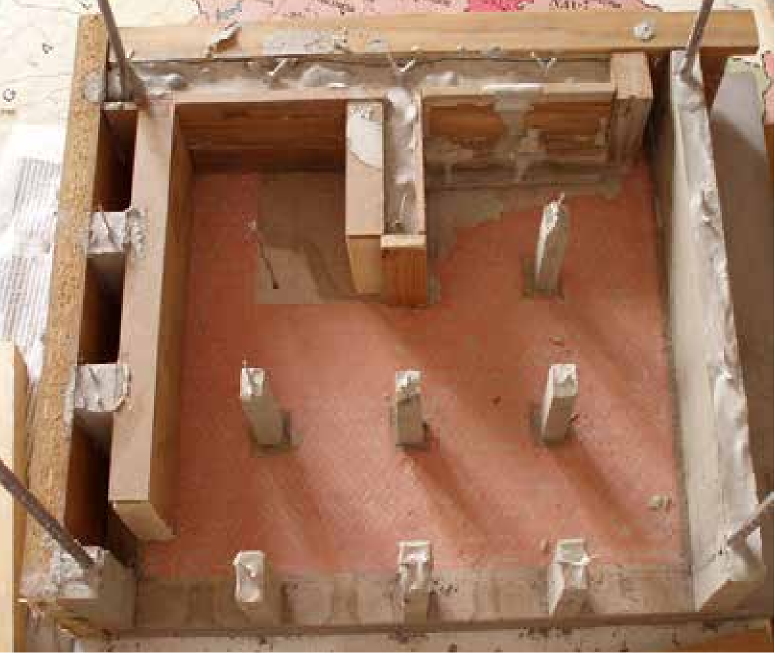
My idea was to build a bearing reinforced concrete structure, with **vertical steel pillars** at the corners to guarantee a greater resistance without changing the external shape of the building. As you'll see, this idea (carefully planned) will only succeed partially and after many headaches.

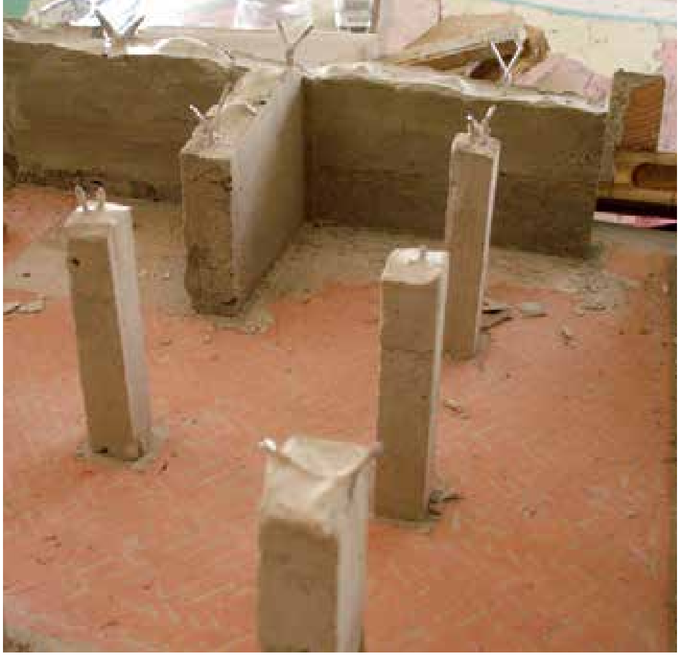
Following the foundation frame on the basement floor, I build a mold with old wooden boards. Inside the mould I insert the steel bars, just like in a real construction site. I recycled the bars from an old bookshelf support, polishing and grooving them to improve the grip with concrete.

So far, so good. Then it's time to prepare the concrete and fill the mold. To allow cement to fill the molds, long and narrow, without forming air bubbles, I prepare a slightly more liquid compound







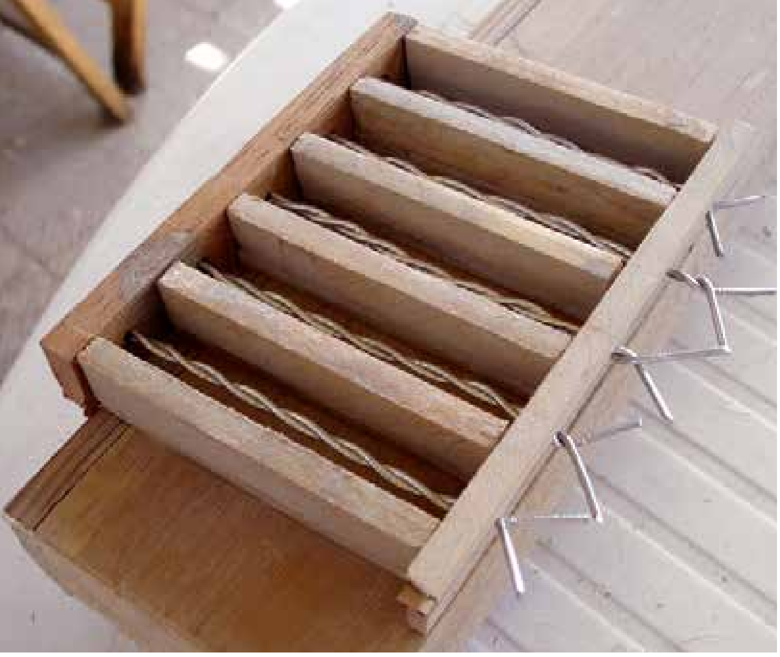


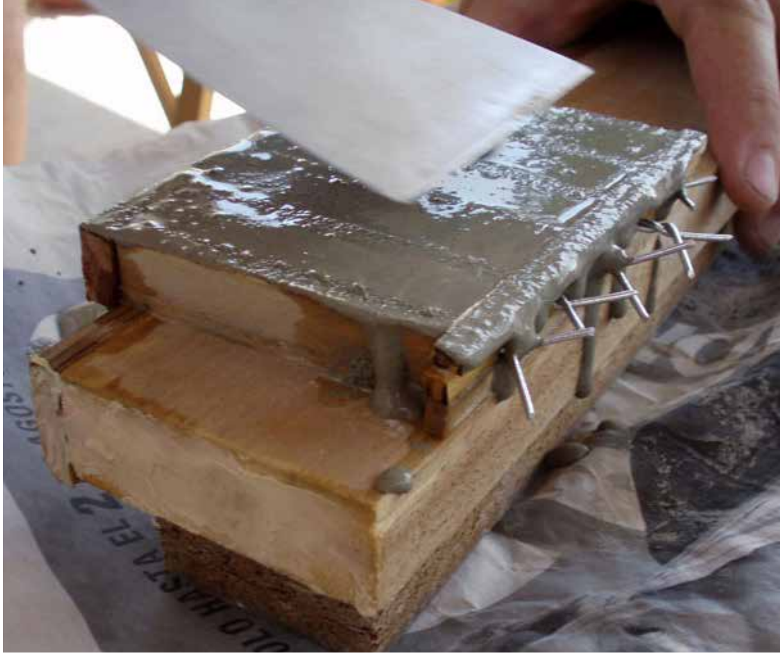
and pour it into the empty spaces. *A posteriori* I can say that it was a fatal mistake. Excess water will not prevent cement from drying, also due to the dry weather of Granada, Spain (where the Domus is being built), but the resulting material will be fragile and of poor quality, so that once dry it will crumble between my fingers.

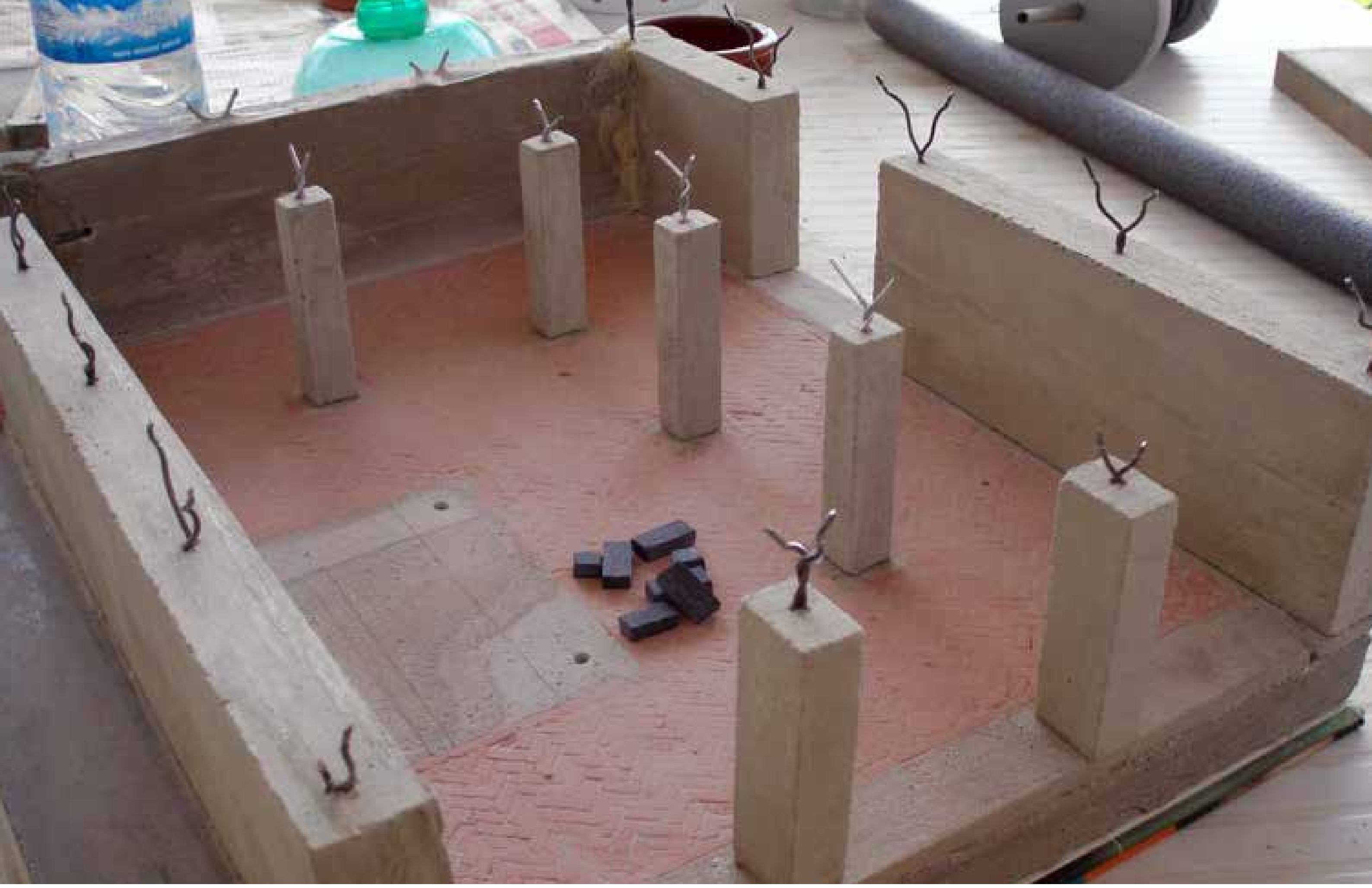
In these pictures, taken after the removal of the molds, it's clear that the structure is defective and a method change is necessary.

I close the site. For a few days the area is being used as a parking lot. Then I opt for a drastic intervention, demolishing the structures almost completely, with the exception of a perimeter wall that looks stronger.

Back to square one: concrete base and brick floor. After the initial discouragement I go back to work, trying to make a good use of my previous errors. This time I'll build separate molds for walls and pillars, obviously after carefully measuring the perimeter. However, I decide to drop the idea of inserting the steel bars into the corners, mainly due to the difficult task of keeping them perpendicular to the ground and because their presence would limit my movements. I'll find a different way to strenghten my building. The molds, though, include a reinforced rod and the compound is prepared using







quick drying cement with a little bit of sand.

In these pictures you can see the making of all pillars and a wall: In the picture above, a full view of the structures in their final position. To fix them to the base I used a strong adhesive in addition to the wire.

The slate tiles you see on the floor are the result of an early cutting test with that particular stone (I'll tell you soon about that).

Some parts still look rough but the structure is strong and it will be hidden by the bricks and the surrounding terrain. In fact, the space between the walls and the edge of the base will be filled with materials and will serve as a base for the above alley. I'll tell you soon about that also...

MATERIALS:
quick drying cement, water, vinyl glue, mastic, iron wire, wooden boards

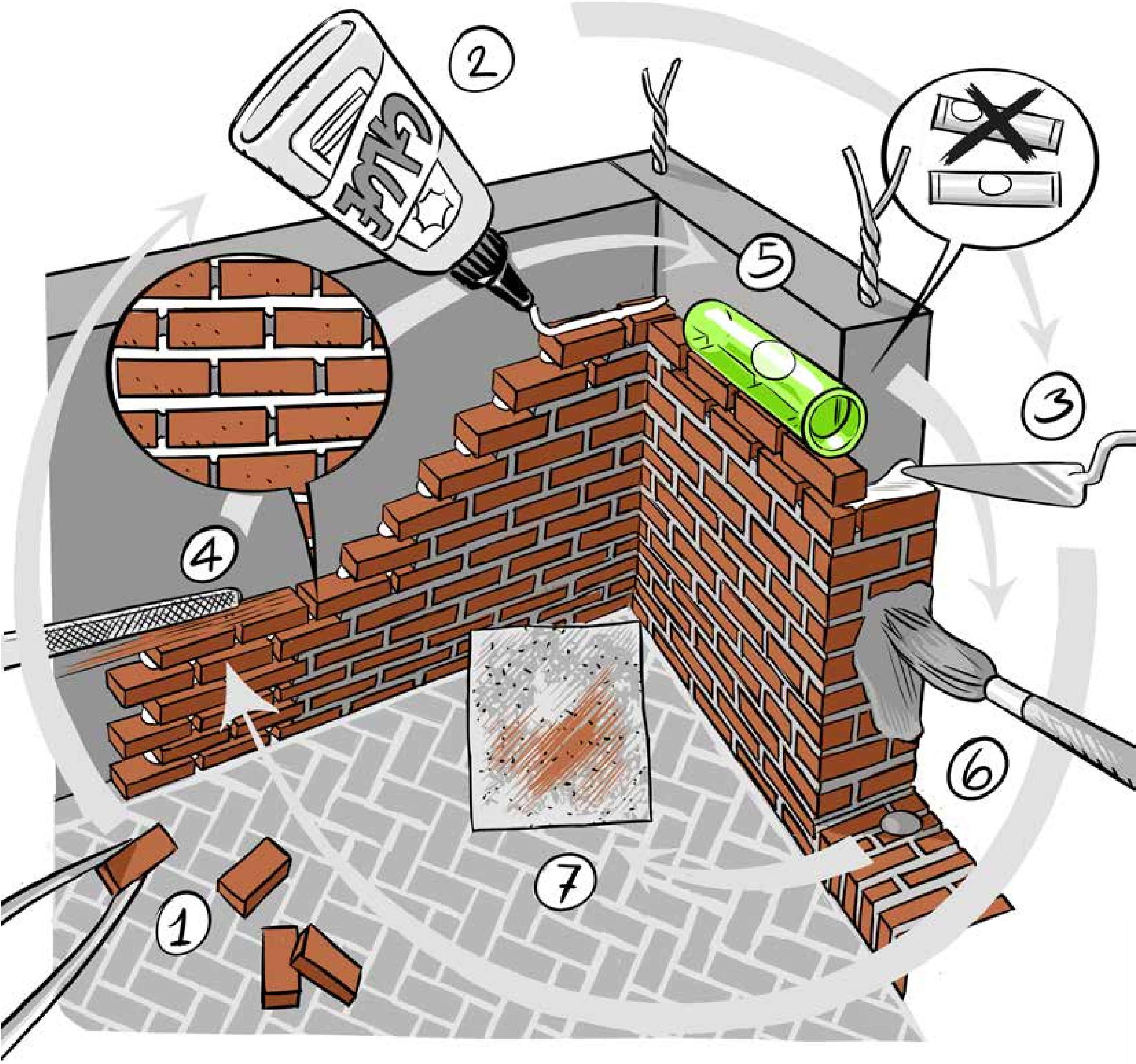
TOOLS:
square, pencil, saw, cutter, spatula, hand sprayer, sandpaper, Dremel tool

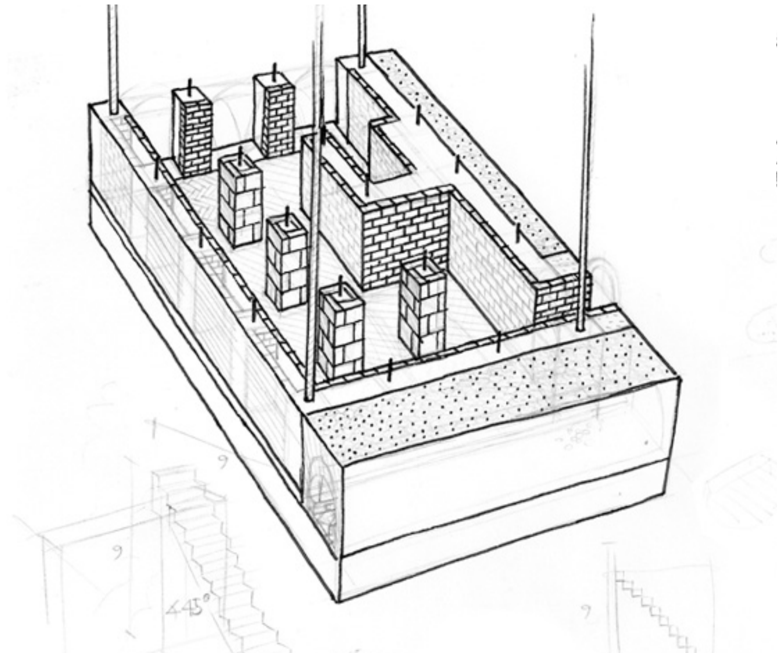
SIZE:
walls height: 63 mm
walls thickness: 20 mm
pillars: 15 x 15 x 63 mm
outer perimeter: 332 x 256 mm
inner perimeter: 292 x 216 mm

Chapter 6

BRICK WALLS

(part 1)





The opening image is a visualization of the different steps during the construction of the basement walls. Let's see every single step with a short description and the aid of the pictures.

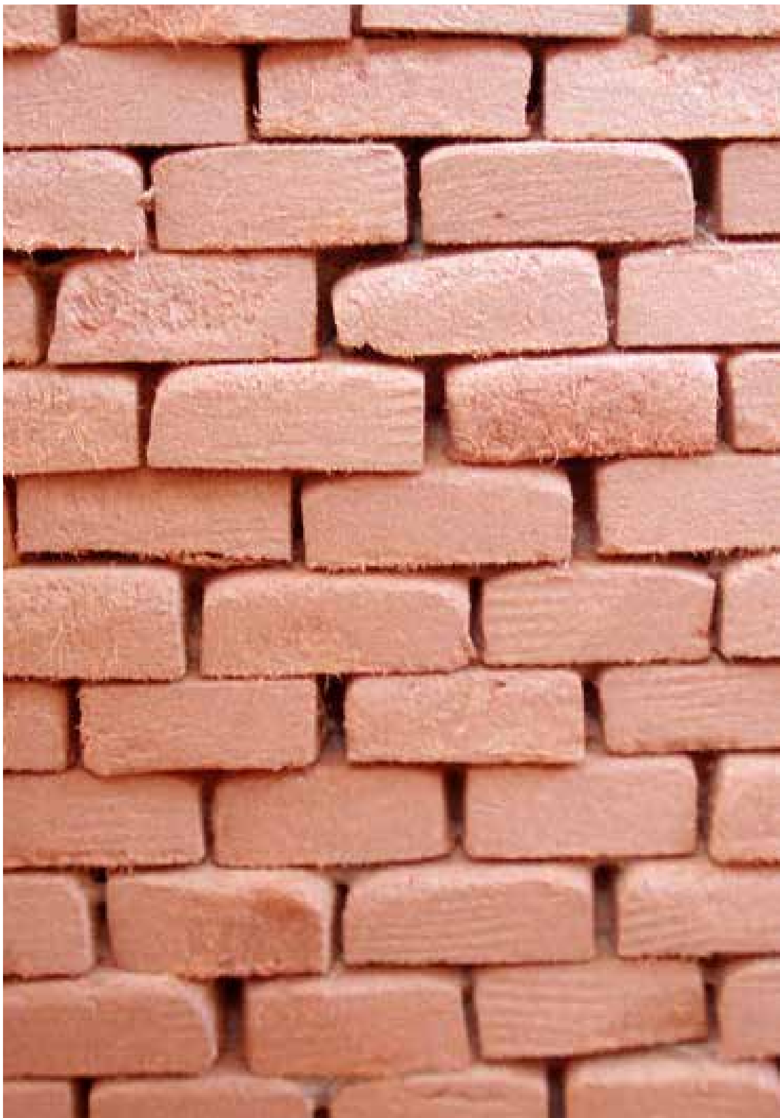
After making a few hundred more bricks with DAS clay (**1**), I place a first row along the concrete walls, thus defining the space of the floor. I glue the bricks with a line of vinyl glue (**2**), being careful to avoid smudges on the visible side of the wall (**3**). Once every single line is finished I polish the surface with sandpaper or files to maintain the horizontality of the courses (**4**). Using a bubble level is a good way to verify the accuracy of the laying (**5**). The next row, obviously, must be placed so that the vertical joints do not coincide with those of the previous one.

I lay more bricks on the threshold on the left to make a small step. At first, no opening was planned on this side of the basement, but the change of method to make the concrete structures (see chapter 5/6) brought me to build two separate walls and the concrete base remained partially uncovered. Later considerations led me to open an entrance also on this wall to make the interior more visible once the cellar roof is finished. Ideally this threshold connects the cellar with the basement of the adjacent building (which I presume belongs to the same owner).

Other parts of the walls remain temporarily incomplete and are continued later, like this one along the external corridor. The passage was already part of the early project, and leads out of the building's underground.

The subsoil of the city is crossed by a series of tunnels and galleries, and this secret passage could connect to another building or simply continue to reach some sewer line. Or again, through this tunnel we can reach an underground cave where a small boat is ready to sail at any time. Batman was not the first to own a secret laboratory!

As soon as I get the chance I'll take a look at the maps of the land register to solve this mistery...



MATERIALS:
DAS bricks (see chapter 2), vinyl glue

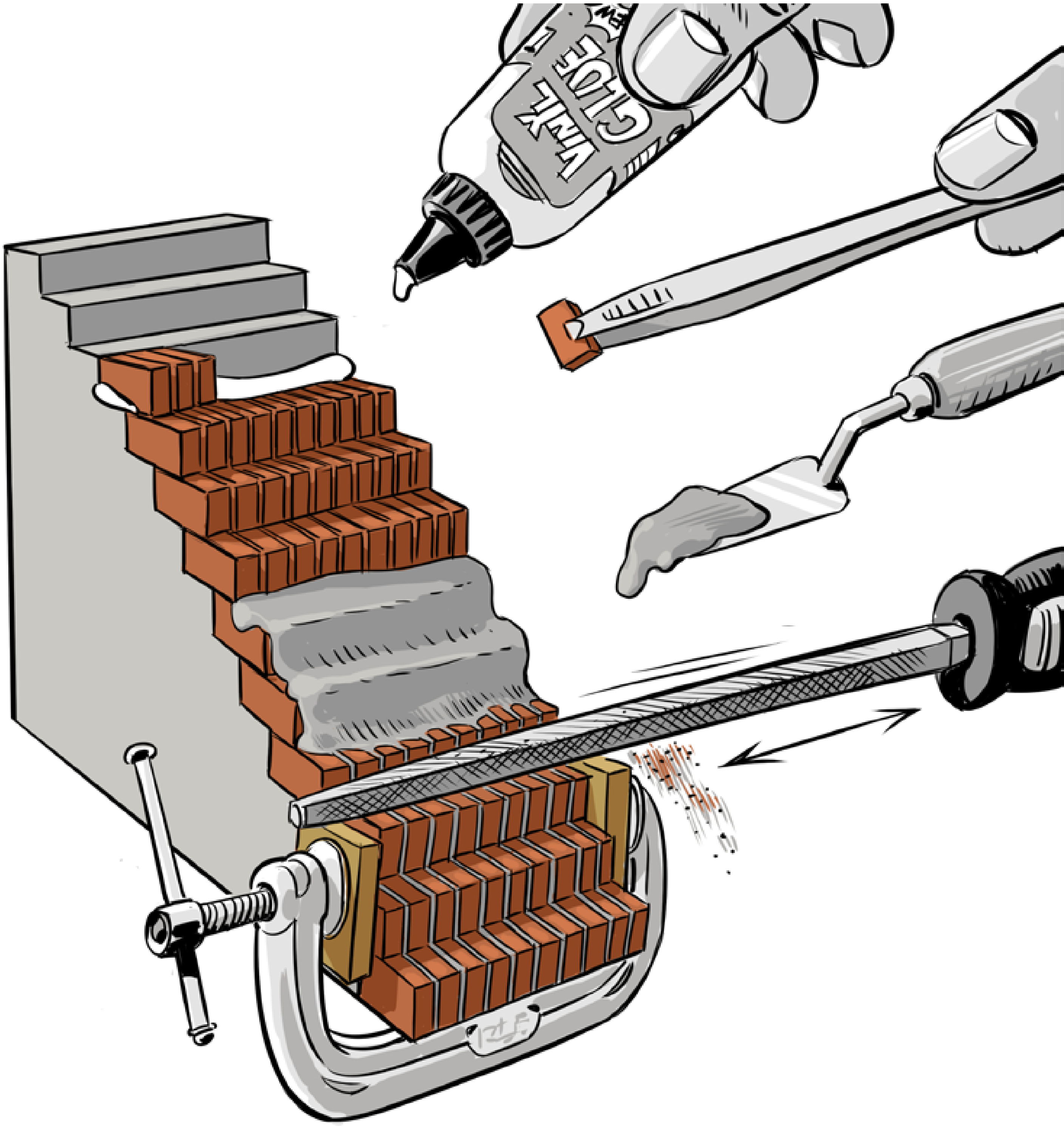
TOOLS:
tweezers, putty knife, cutter, sandpaper, metal file, bubble level

SIZE:
bricks: 5 x 8 x 2 mm

Chapter 7

BRICK STAIRCASE

(part 1)



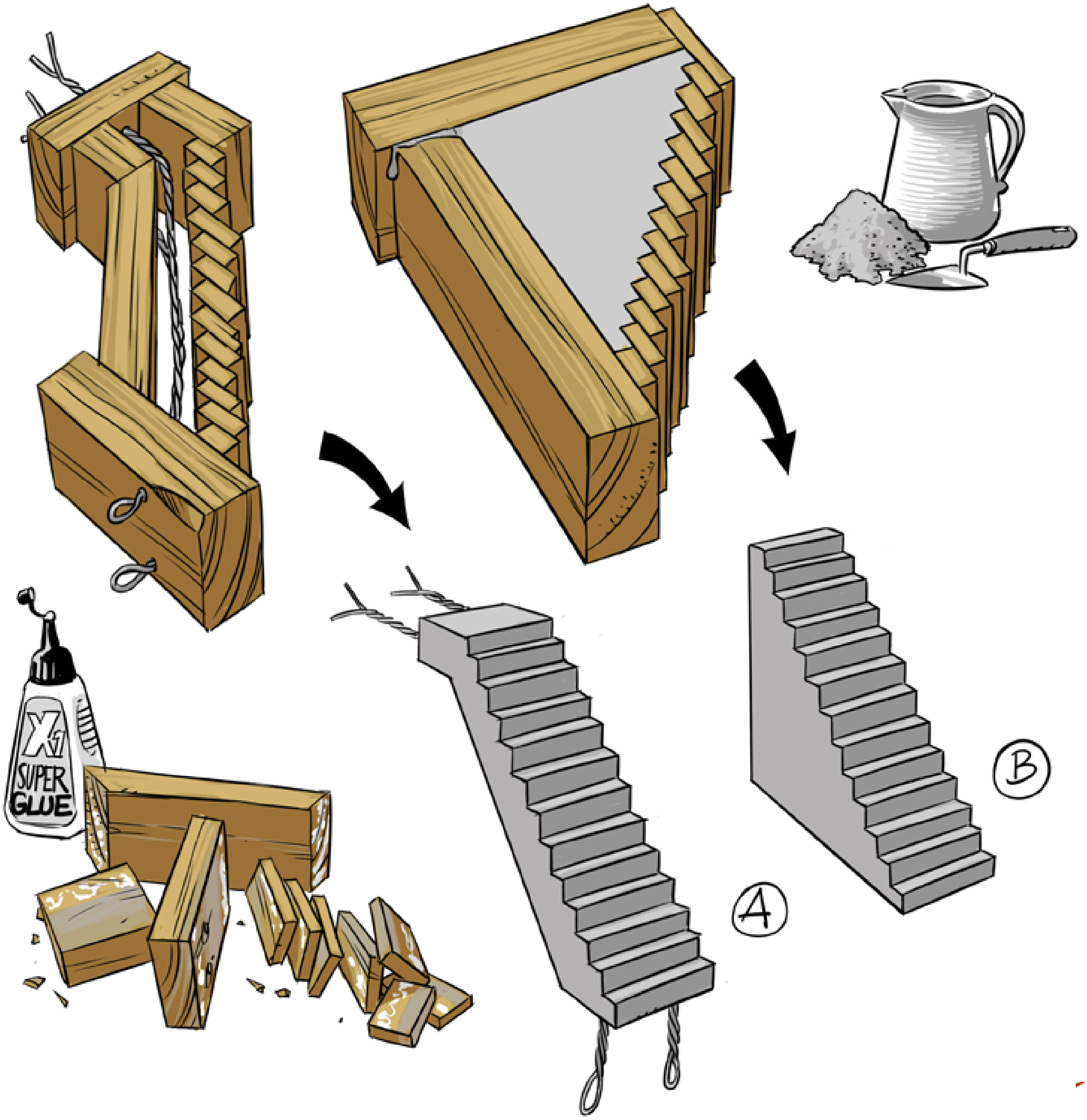
To build the staircase that leads to the ground floor, first of all I must prepare a **concrete structure** where I'll lay the bricks, using the same technique shown for the underground walls (see chapter 5/6). The structure replaces what actually would be the terrain on which the house is built.

This time the mold requires a more careful work, as it already presents the steps on which the bricks will be applied and must necessarily comply with their size. Moreover, if the staircase were a little longer or a little shorter, it wouldn't coincide with the ramps of the upper floors and with the access door to the cellar at its top, altering a series of measurements that I honestly don't know if I could correct.

In the following drawing I illustrate two options for the construction of the concrete structure, starting from a wooden formwork specially assembled with a little vinyl glue.

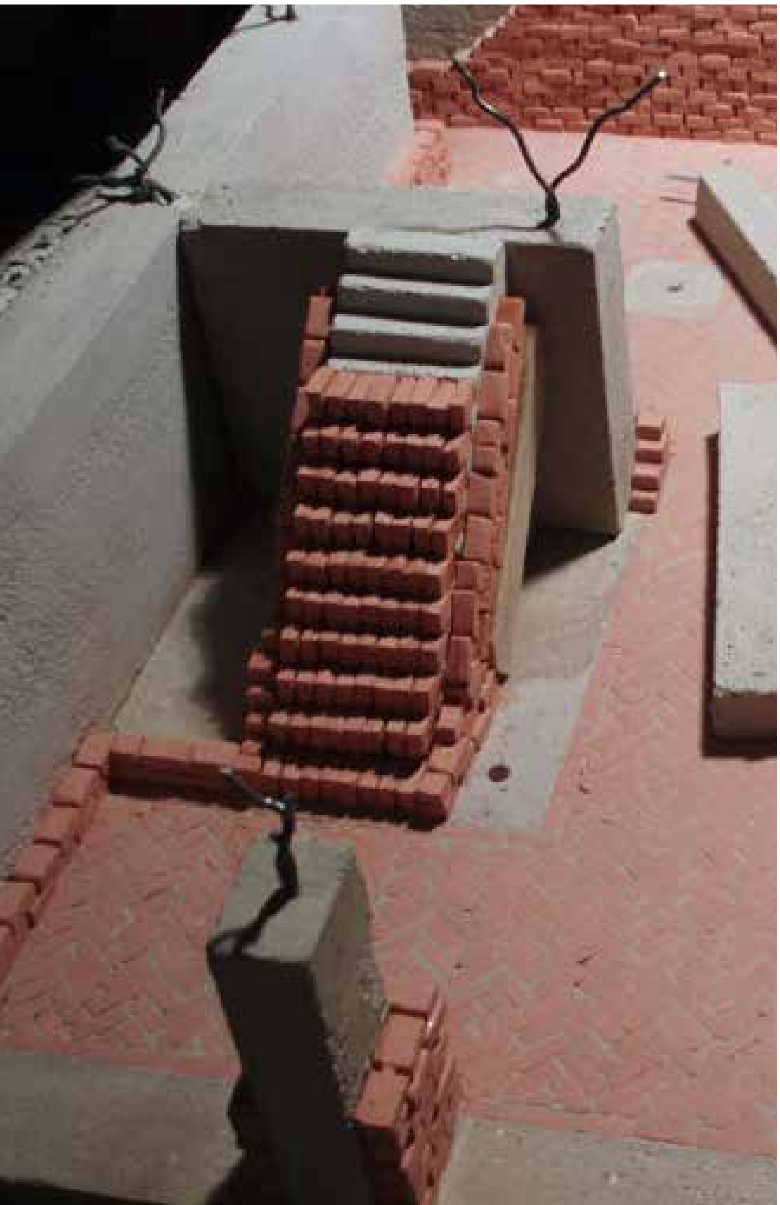
The first example (**A**) it's a reinforced concrete staircase with a modern shape and it could be inserted in a structure on many floors without overloading the model. The rebars are made with **twisted metal wire** and inserted in holes drilled directly on the formwork.

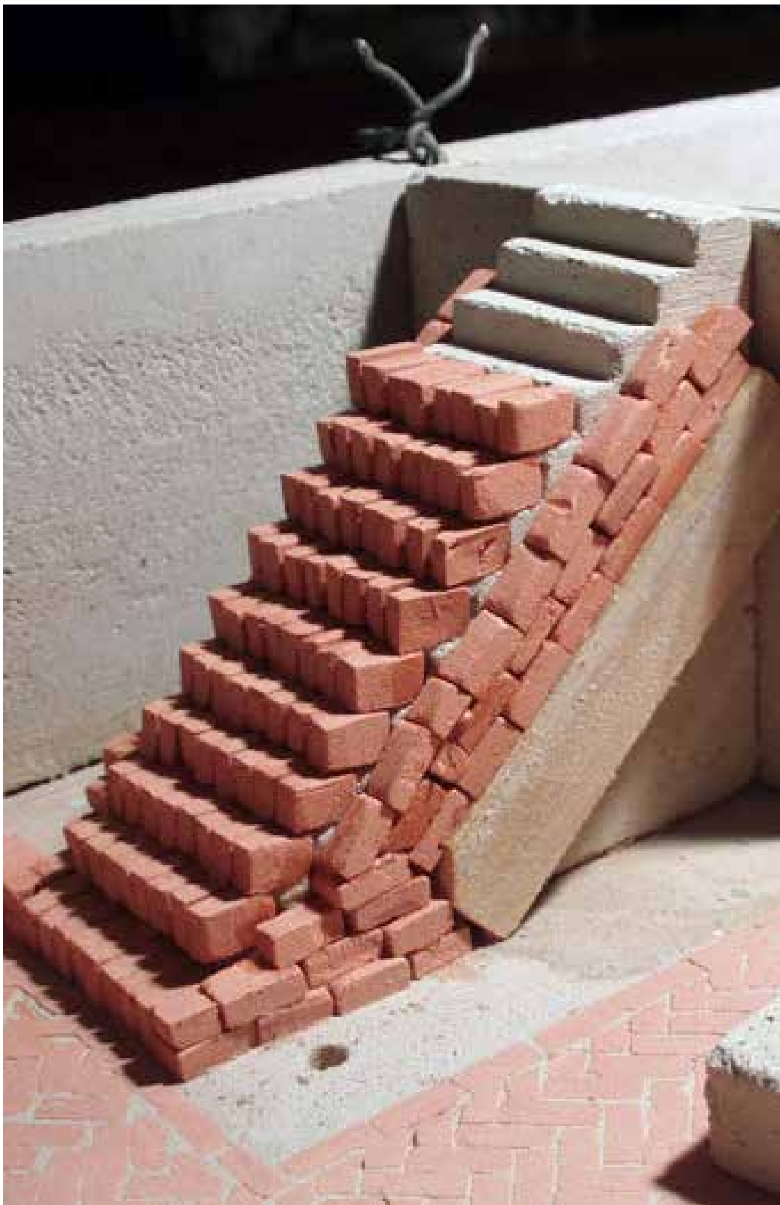
The second one (**B**) is a simpler and more massive model that has no internal rebars, and is the one I chose for this first underground ramp.

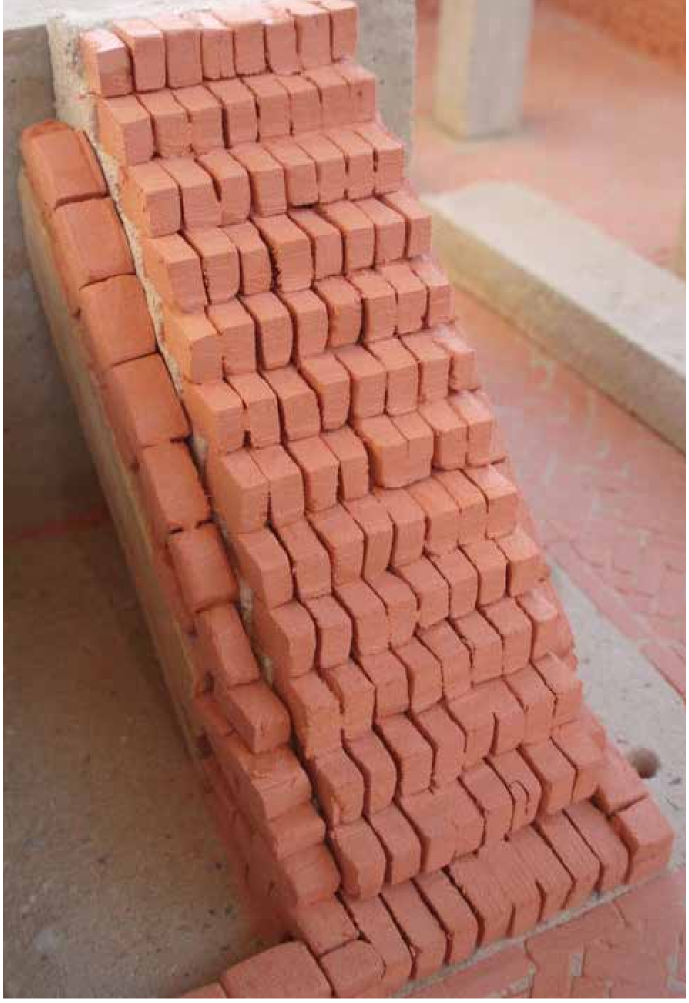


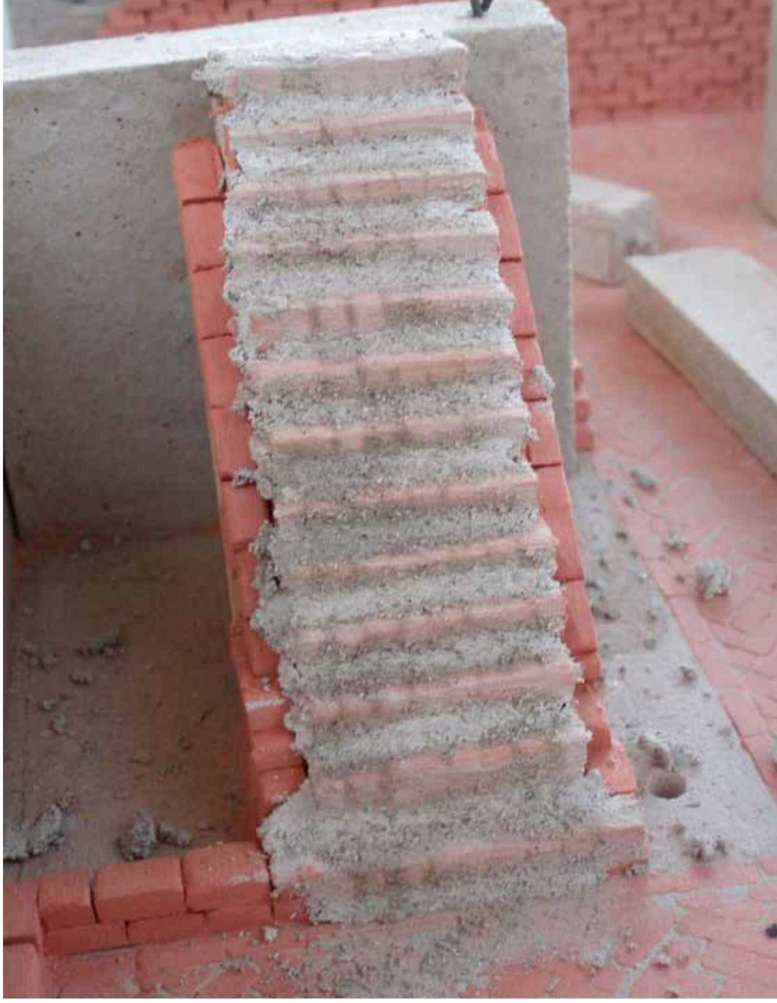
Once a solid and precise base is built, I can proceed with the laying of the **bricks**. In addition to the actual steps, I'll have to start working on the side walls of the stairwell. I opt for sloping courses, which follow the same incline as the staircase. In most of the documentation I found, the courses are horizontal even when built over a staircase, but I feel that the sloping wall gives the whole structure a more "ancient" look. I can't help thinking of the typical wooden balustrades of the Roman houses, whose struts were perpendicular to the staircase and not to the horizontal line of the floor. If you've never noticed that, go and see Ben Hur's house visible in many sequences of the movie, or even better, the reconstruction of some Pompeian domus.

However, I take a nice poetic license by building the base of the walls with wooden strips placed at the right angle. It's a way to avoid wasting more precious bricks, but please, **don't do it**, as it is against all constructive logic!



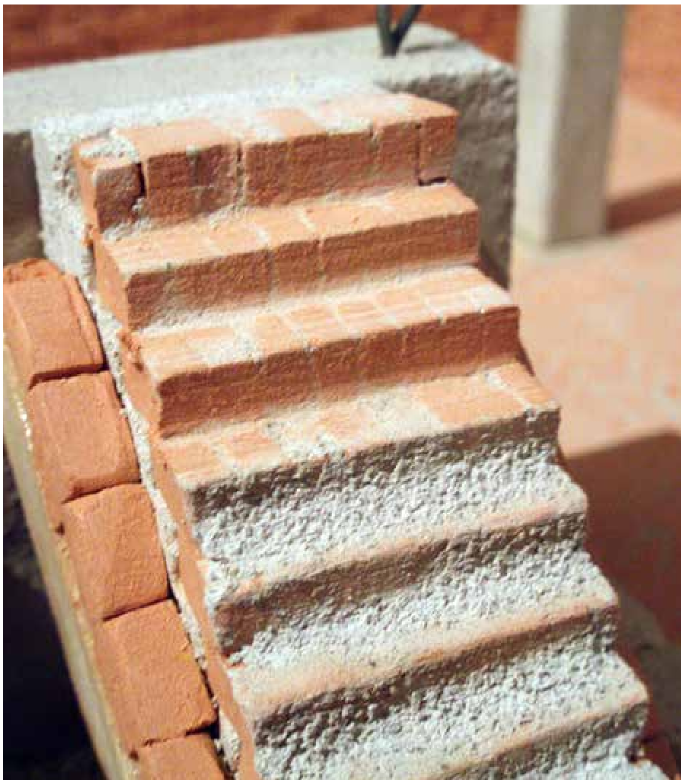


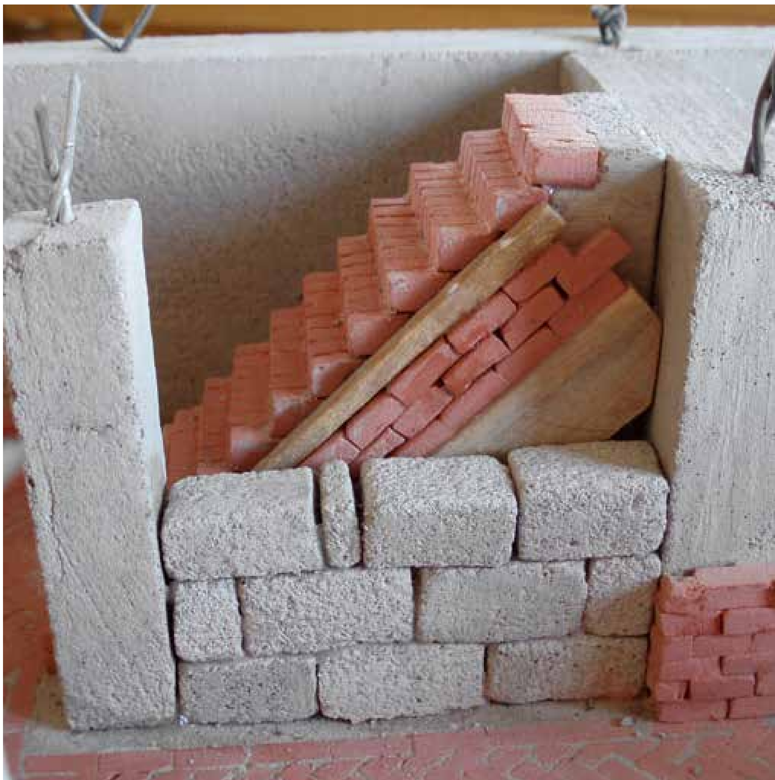


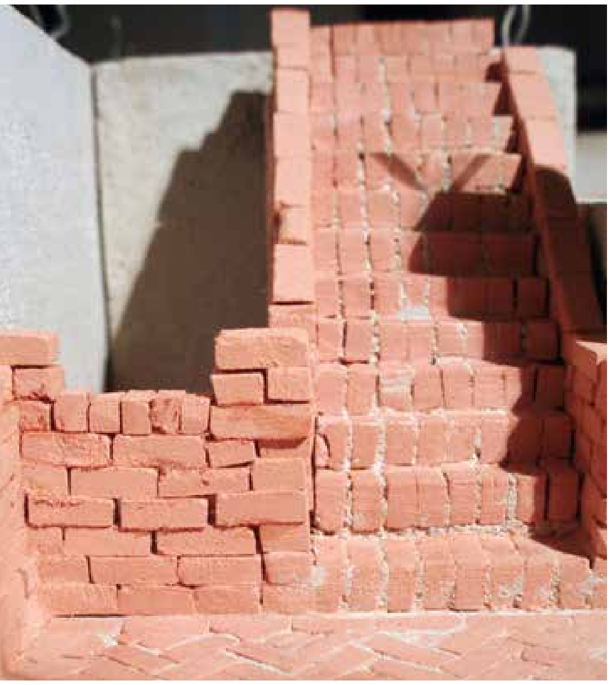


As it appears in these pictures, the staircase still lacks three steps to reach the upper floor. For the moment I stop it here and fill the joints with the same quick-setting cement used for the floor.

I also add the pillar to the right of the staircase, which I didn't insert before because it didn't interfere with my giant hand while finishing the steps with files. Then, taken by sudden inspiration, I build the missing portion of the wall with small blocks of cement instead of a single piece as I've done previously. After all, the effect of these blocks is quite interesting. Perhaps more suitable for a military structure or for the city walls than for a private house. Probably they come from the building waste of the towers of Saint Andrews (Porta Soprana), received by the landlord as a gift from the city authorities in exchange for his favors ... or perhaps they're a "small" souvenir of the last crusade.
Who knows?







On the left side of the staircase there's a small opening that will give access to the **water cistern**. Here below you can catch sight of it, but we'll see it better soon.

The filling of the joints is not as perfect as I'd like and it will need a second pass, perhaps with a slightly more diluted cement.

To conclude this chapter, let me give you another little warning: pay attention to where you put your feet when you go down the stairs. They're rather steep and, to make matters worse, I realize now that the first step is quite crooked! I'll try to reshape it with sandpaper...

MATERIALS:
fast drying cement, water, (wire), vinyl glue, Das bricks, wooden strips

TOOLS:
wooden formwork, tweezers, sandpaper, files, putty knife

SIZE:
concrete structure: 75cm (base) x 85cm (h) x 3cm
bricks: 5 x 8 x 2cm

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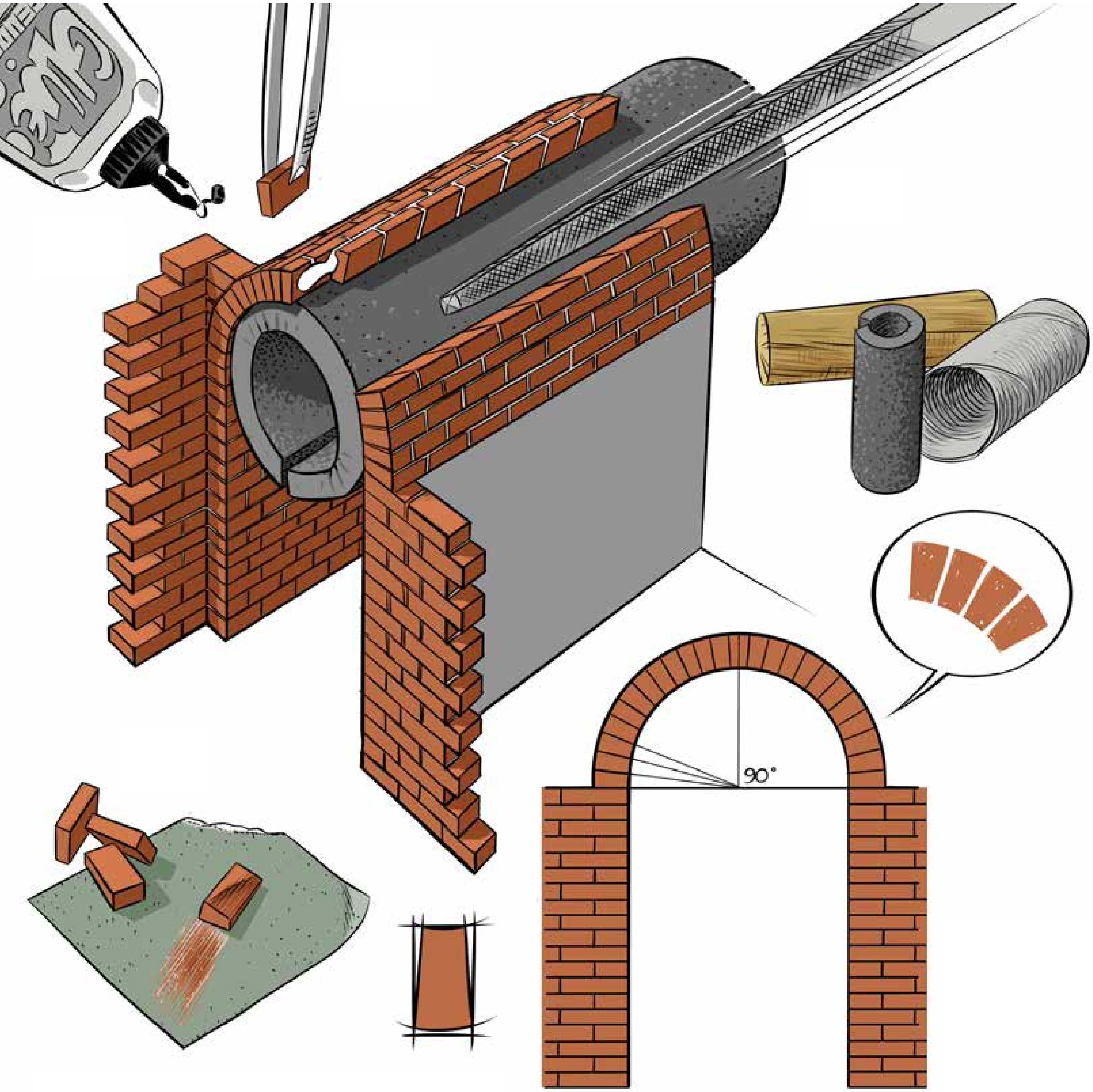
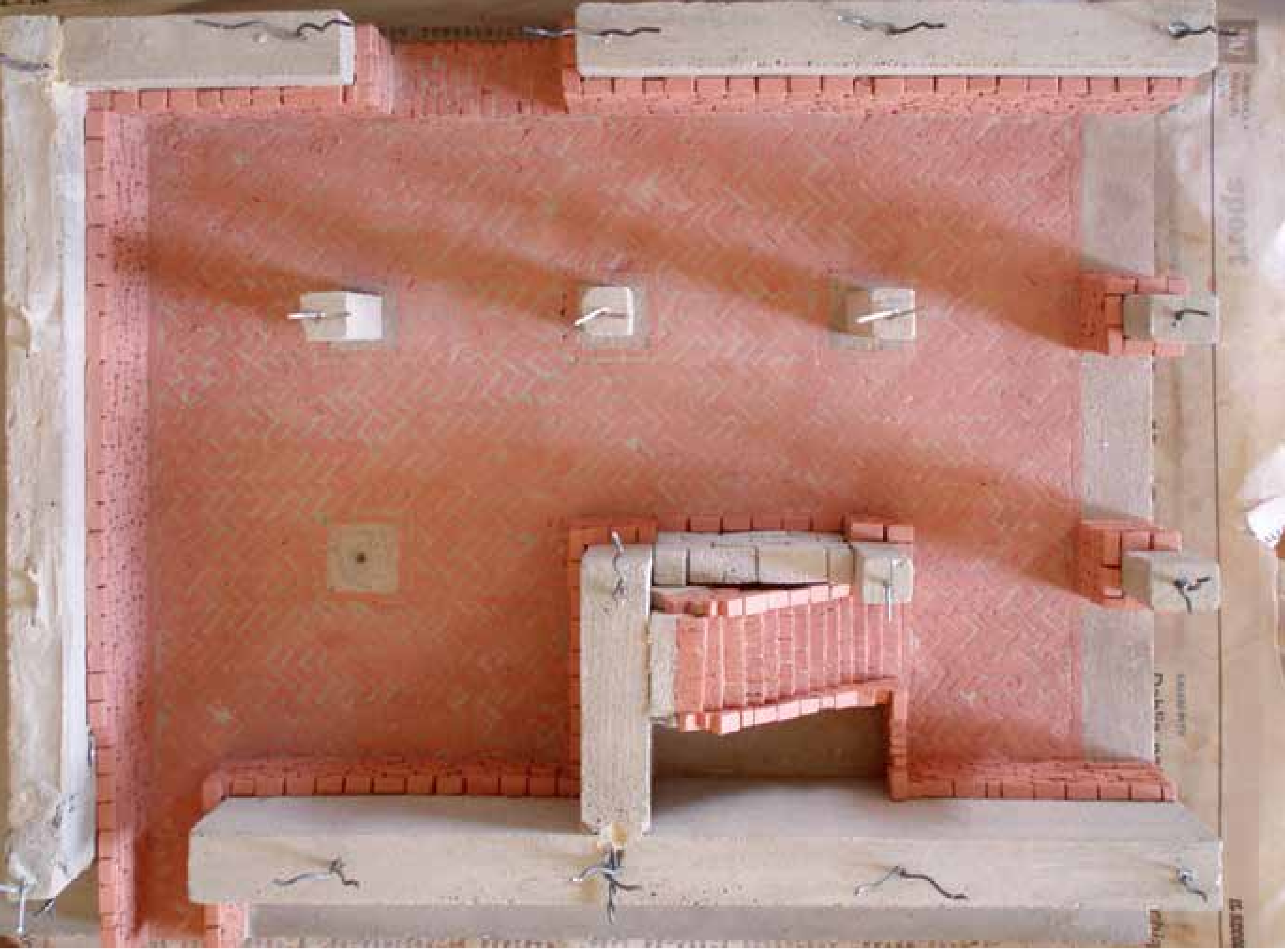
Chapter 8

BARREL VAULT

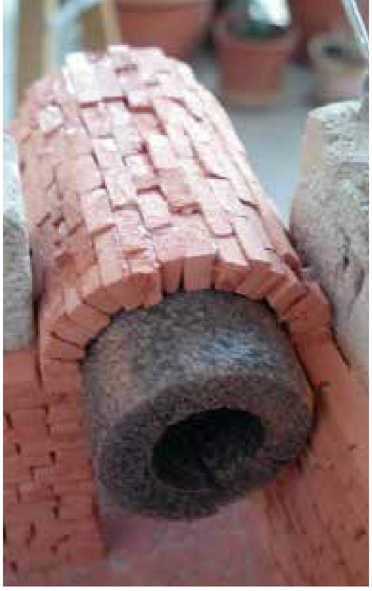


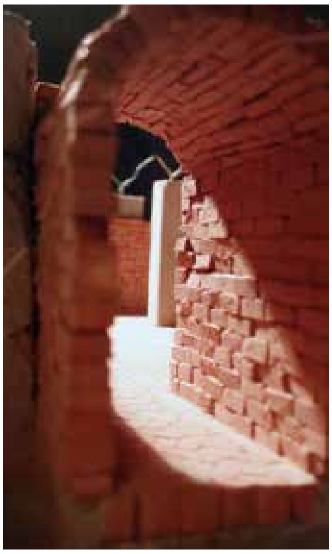
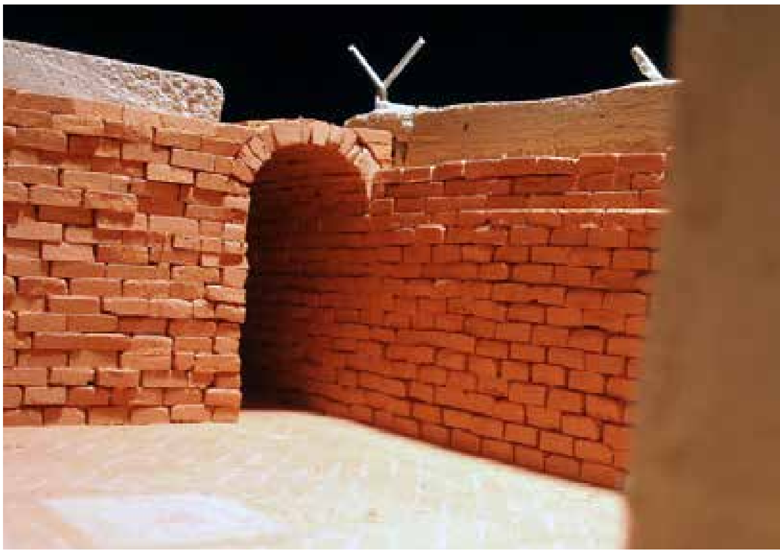


The cellar with its stairwell, pillars and perimeter openings is slowly taking shape.

Look at the picture above: On the right, three arches leave the wall completely open. Through those openings it will be possible to observe the inside of the structure once the vaults are closed. Another entrance gives access to the widest part of the basement, which converges in the lower left corner on the narrow tunnel already seen on previous chapters. This tunnel will be the starting point for the construction of the vaults.

In this case it's a simple **barrel vault**, for the construction of which I use a segment of a foam pipe that fits perfectly the width of the tunnel. I lay the



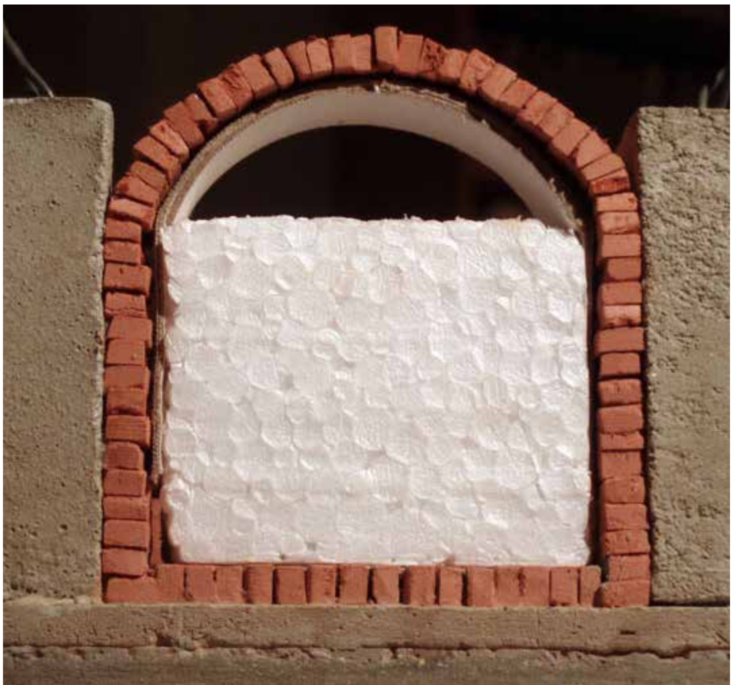



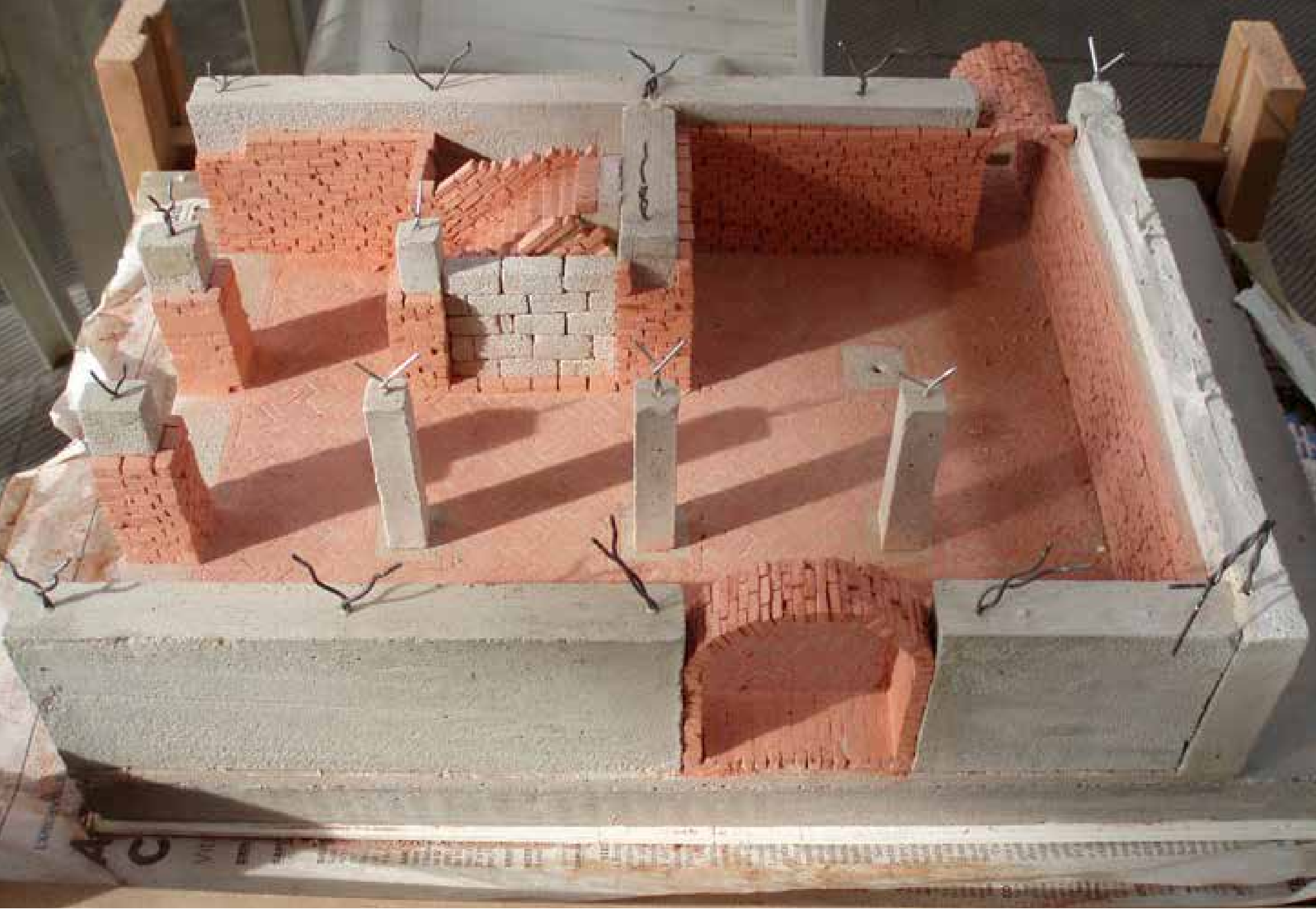
bricks directly on the pipe following its curve, but inserting the glue only between bricks without letting it drip on the support. The last courses join together at the center of the tube, closing the vault.

To ease the curve, before placing each brick I retouch it with files or sandpaper so as to give it a slightly trapezoidal shape, keeping the smaller side inside the vault and the wider one outside.

With dry glue, I can remove the foam and the vault can stand on its own.

Same procedure for the arch of the side door, this time built on a temporary structure made of cardboard and polystyrene.





And here's how the construction site looks like at dawn on the following day...

MATERIALS:

vinyl glue, DAS clay bricks, foam pipe, cardboard (from a roll of toilet paper), polystyrene

TOOLS:

tweezers, sandpaper, files, putty knife, cutter, square, pencil

SIZE:

- tunnel: 70 x 27 x 46cm (at the base of the arch)
- vault height: 13,5cm (intrados); 17cm (extrados)
- side opening: 23 x 56 x 46cm (base of the arch)
- arch height: 25cm (intrados); 29,5cm (extrados)

Chapter 9

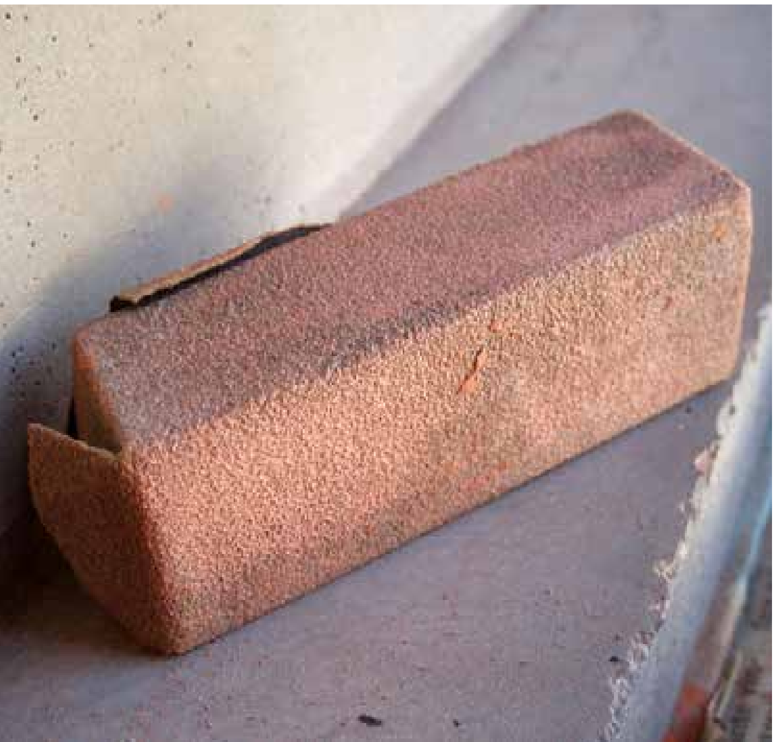
BRICK WALLS

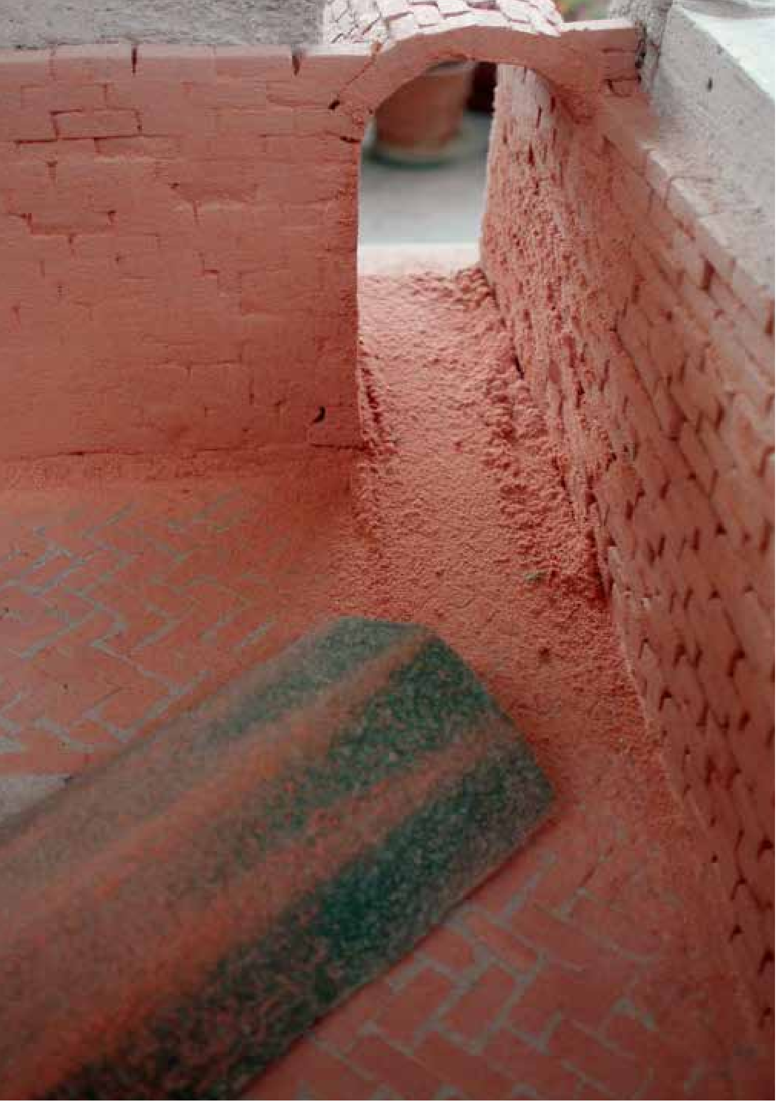
(part 2)

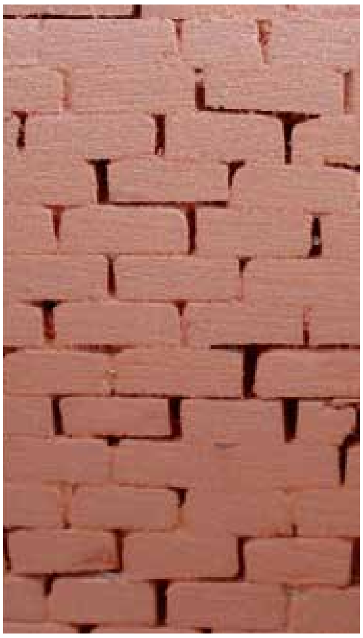
As for the floor, once the laying is completed, I work with sandpaper to smooth the surface and make some cement to close the joints.

For the polishing of the walls (before and after the grouting with cement) I prepare a small tool by gluing a fine-grained sandpaper cutout onto a wooden support, that will allow me to finish corners and edges more precisely than with just my fingers.

Anyway, this time I don't finish the walls as accurately as I did for the floor, but I leave some irregular areas to add a touch of realism.







Once the polishing is done, the walls must be cleaned of all the dust. This operation is specially annoying, since a standard hand vacuum cleaner cannot eliminate what lies in the corners and inside the joints, forcing me to adopt an effective but undignified method: blowing! After some bad experiences I learned to close my eyes in time and to move my face away from the model before I caught my breath...

To fill the joints, I prepare a rather liquid solution of water and cement that I can apply with a simple brush, and then remove the excesses with the same brush or a damp cloth.

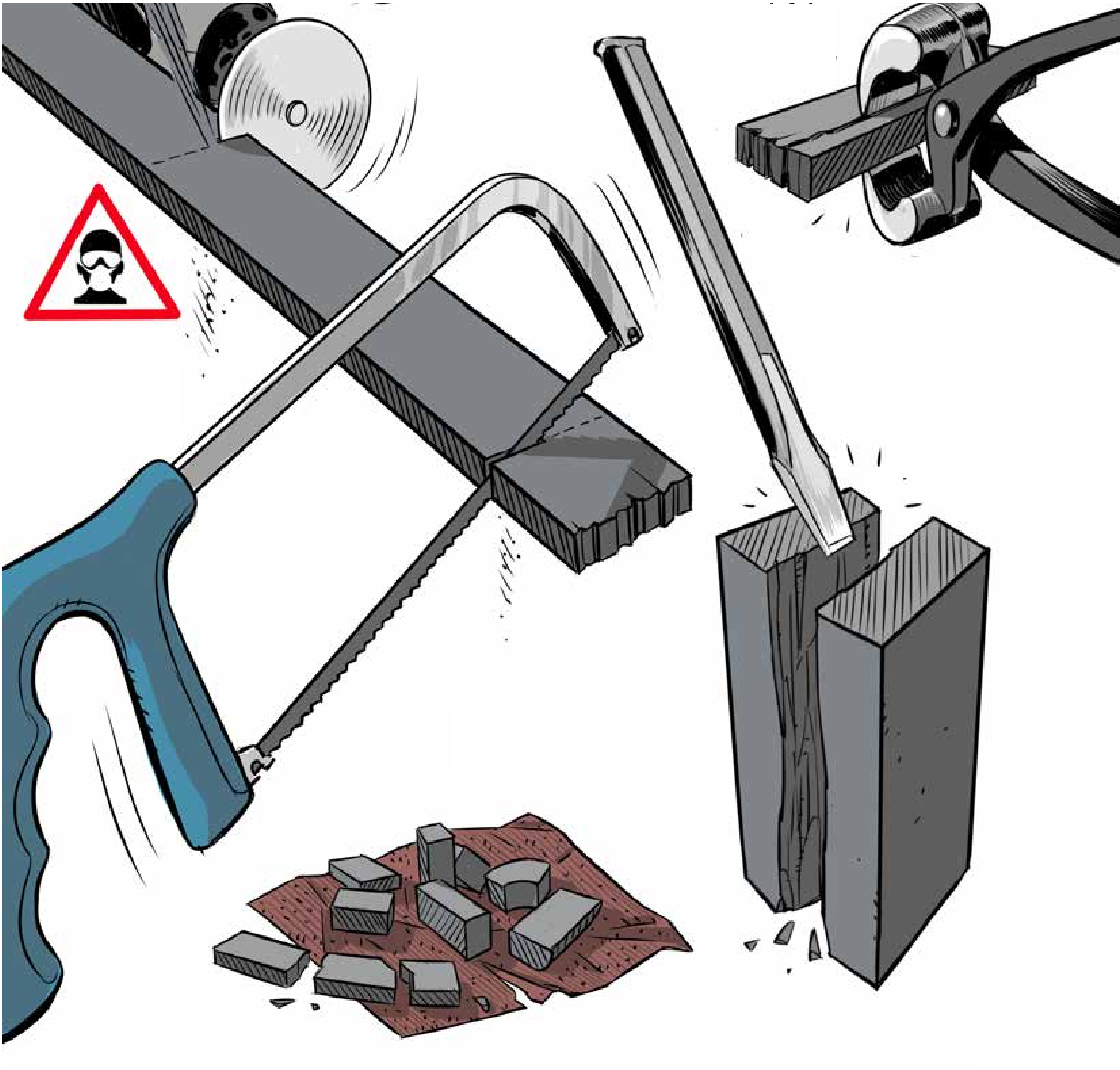
Finally, a last sanding, lighter than the previous one, just for the satisfaction of making a little more dust ...

MATERIALS:
cement, water

TOOLS:
sandpaper, files, brush, damp cloth

Chapter 10

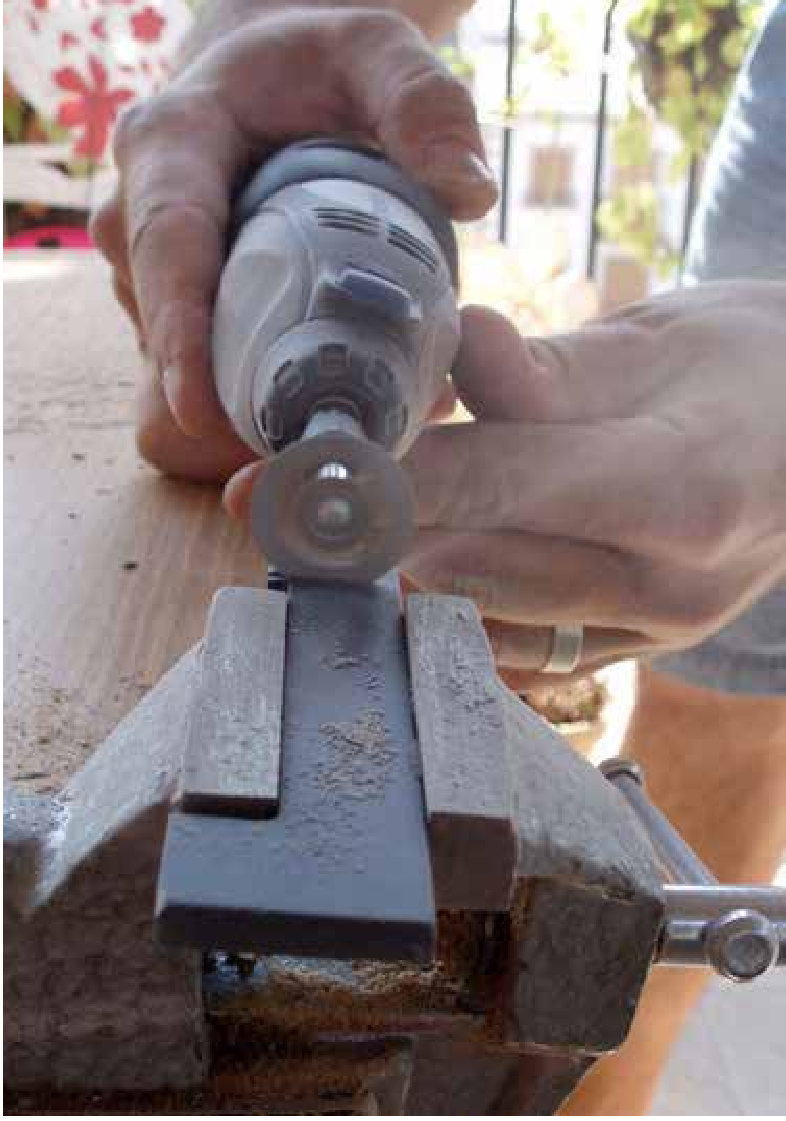
SLATE CUTTING



The slate I use to build my Domus comes already cut into strips of different sizes, but with thicknesses no greater than 1 or 2 cm. When I collected the strips in a scraper box of a marble workshop I didn't know which tool I should've used to cut them, so I preferred to pick up the smaller and lightweight ones. Weight is not a negligible aspect, since I had to put them in my suitcase and bring them to southern Spain, where real slate is not found so easily.

I made the first cutting tests with **pincers**. Given the highly stratified structure of the slate, it is convenient to follow its natural foliation during this operation, also because otherwise the risk of breakage on smaller pieces is quite high.

With a simple "bite" of pincers at the right point, you can extend the cut along the entire length of the bar, significantly reducing time and effort. Unfortunately, the pieces I've collected do not always have the layers arranged in the most comfortable direction and when a cut perpendicular to the folia-



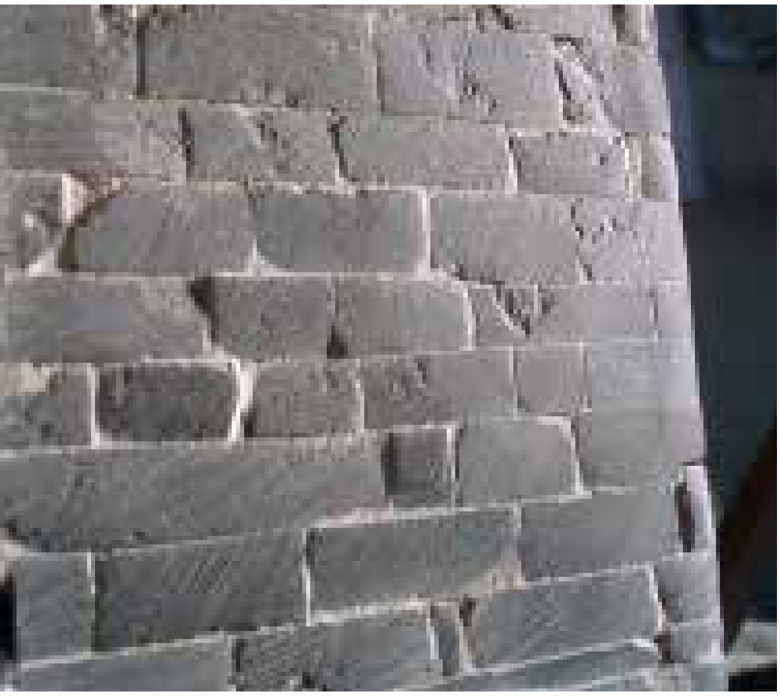
tion is needed, things get complicated. In this case a lot depends on the thickness of the bar: under a half centimeter I still use pincers, while for greater thicknesses I rely on the **metal hacksaw** or the **diamond cutting wheel** of the Dremel tool.

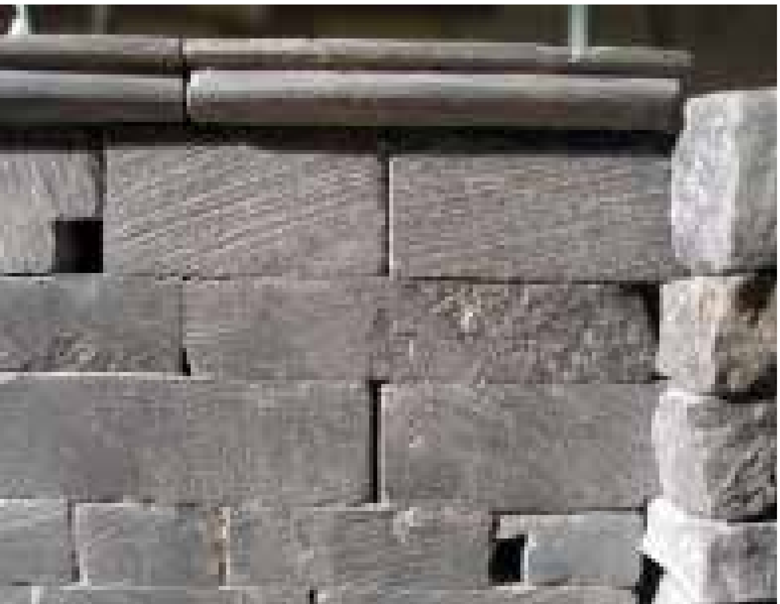
Using a **clamp** to lock the piece to the work table, the hacksaw works very well and without raising too much dust. However, in the long run it's a bit tiring and it's necessary to change the blade often. Obviously, before the arrival of the Dremel, it was the only way for me to make this kind of work. Immediately after the purchase I did some cutting tests whose result can be seen in these pages.

Thanks to its small size the work is not too hard and does not tire the engine too much. The main drawback is that, being a dry cutting, it inevitably produces a certain amount of dust (my eternal enemy). Unless you have a special room available, doing this work at home would be madness. Better work in the open air!

Obviously the Dremel must be handled with care and it is convenient to protect the eyes from possible splinters with a pair of work glasses (and also a mask, since breathing this dust doesn't seem to be very healthy).

Once cut (manually or mechanically), the slate can be worked with **metal files** or **sandpaper** to obtain ashlar stones or other architectural elements of the most different shapes. Using a fine-grained sandpaper will result in perfectly smooth surfaces that will tend to take a darker color, although this stone, by its nature, lightens over time. A more rough sanding, on the other hand, will leave visible scratches and marks that will give the walls a less refined look (suitable for external walls).





MATERIALS:
slate

TOOLS:
pincers, hacksaw, clamp, sandpaper, Dremel tool with diamond cutting wheel, files

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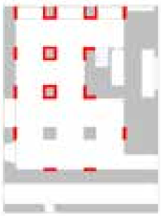
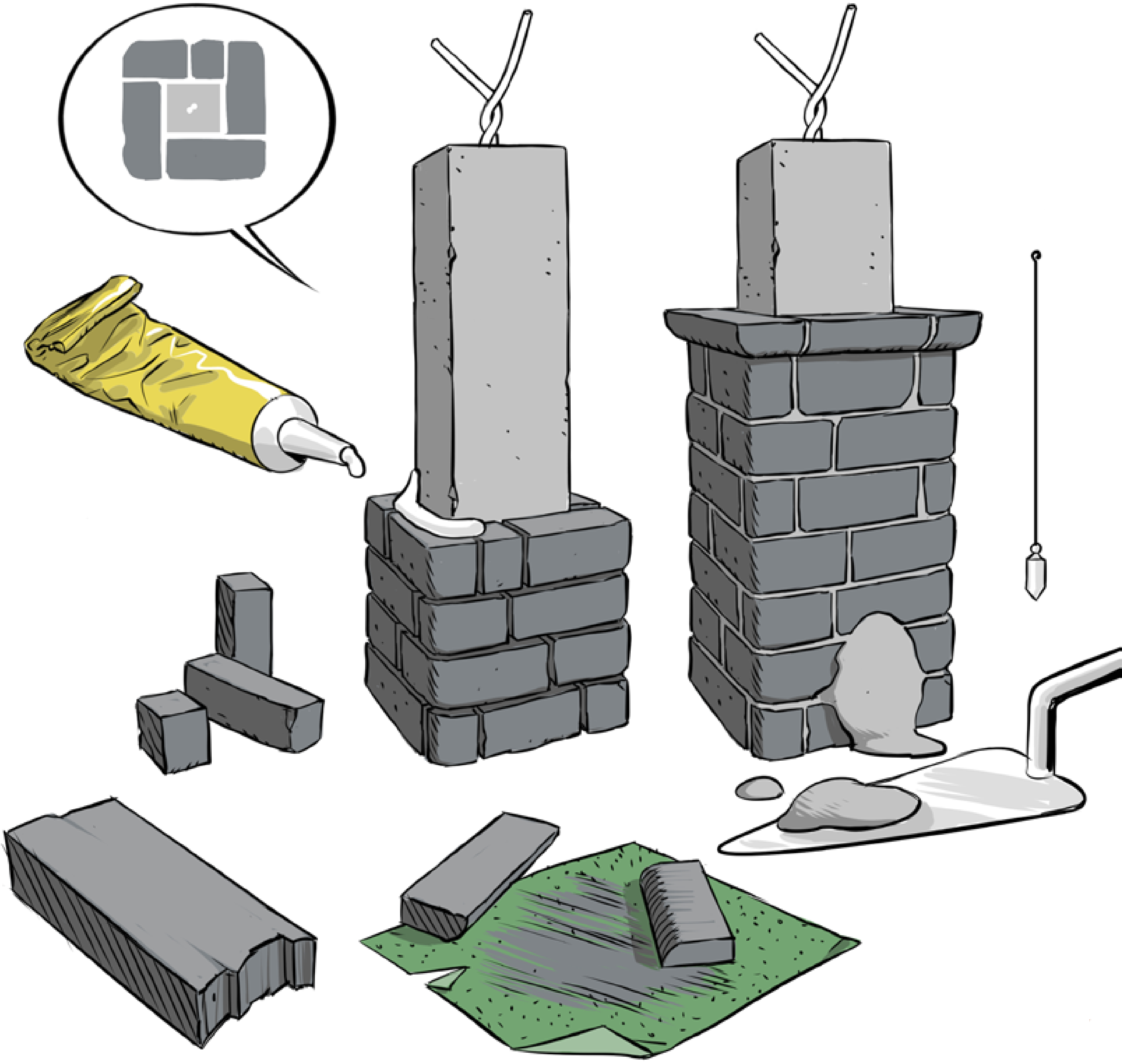


Chapter 11

STONE PILLARS

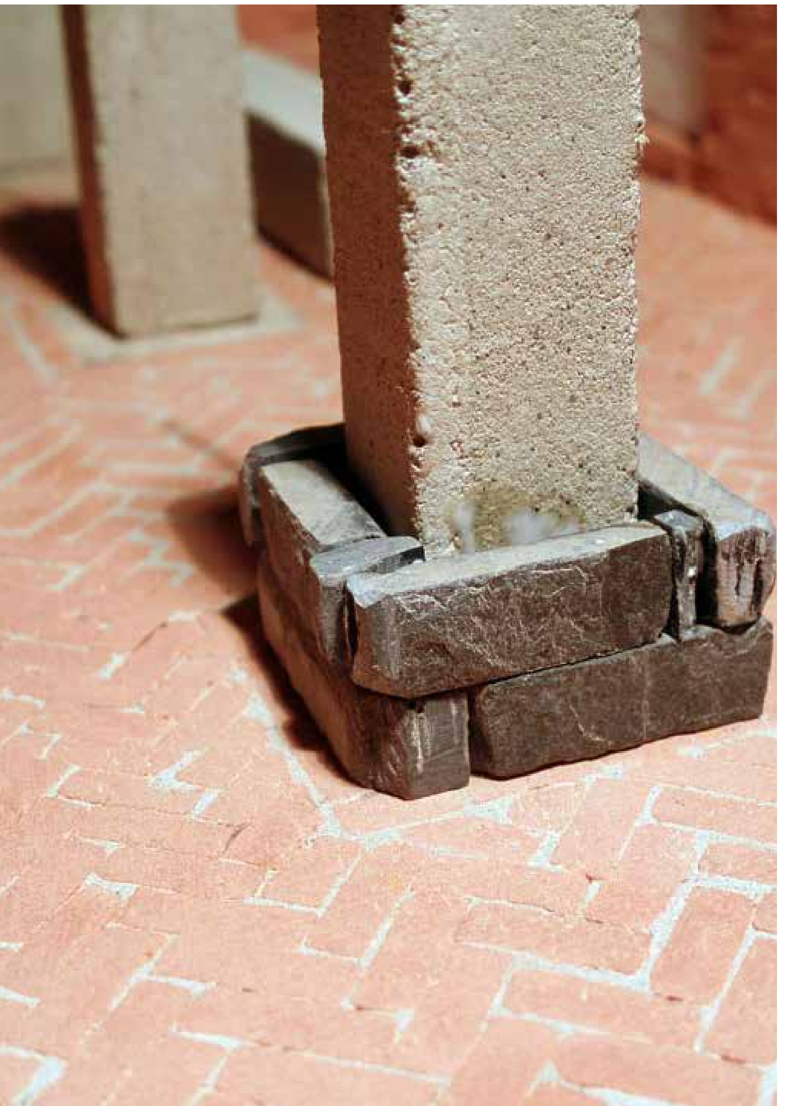


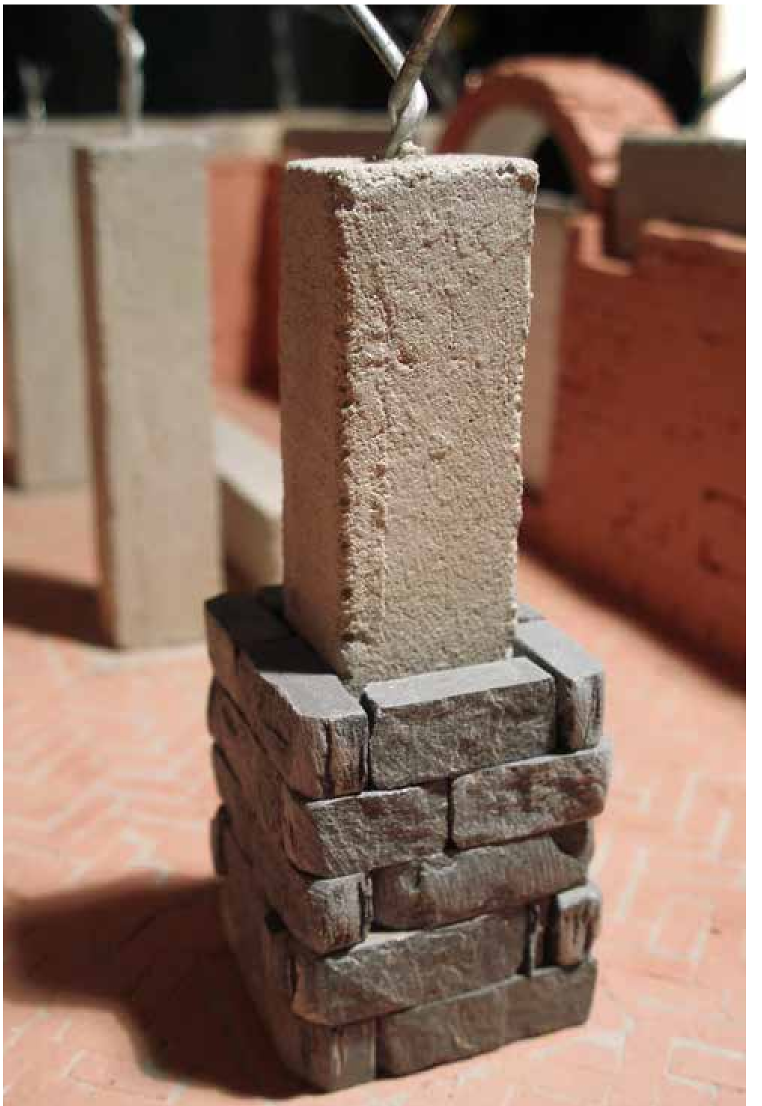
In this first phase of the construction I had few opportunities to experiment with stone, and when I did it was nothing more than simple tests. The first real elements were the corbels for arches and vaults, and the frames of pillars on the open side of the basement. Now the time has come to make something concrete to justify the presence in my wardrobe of that box full of slate.

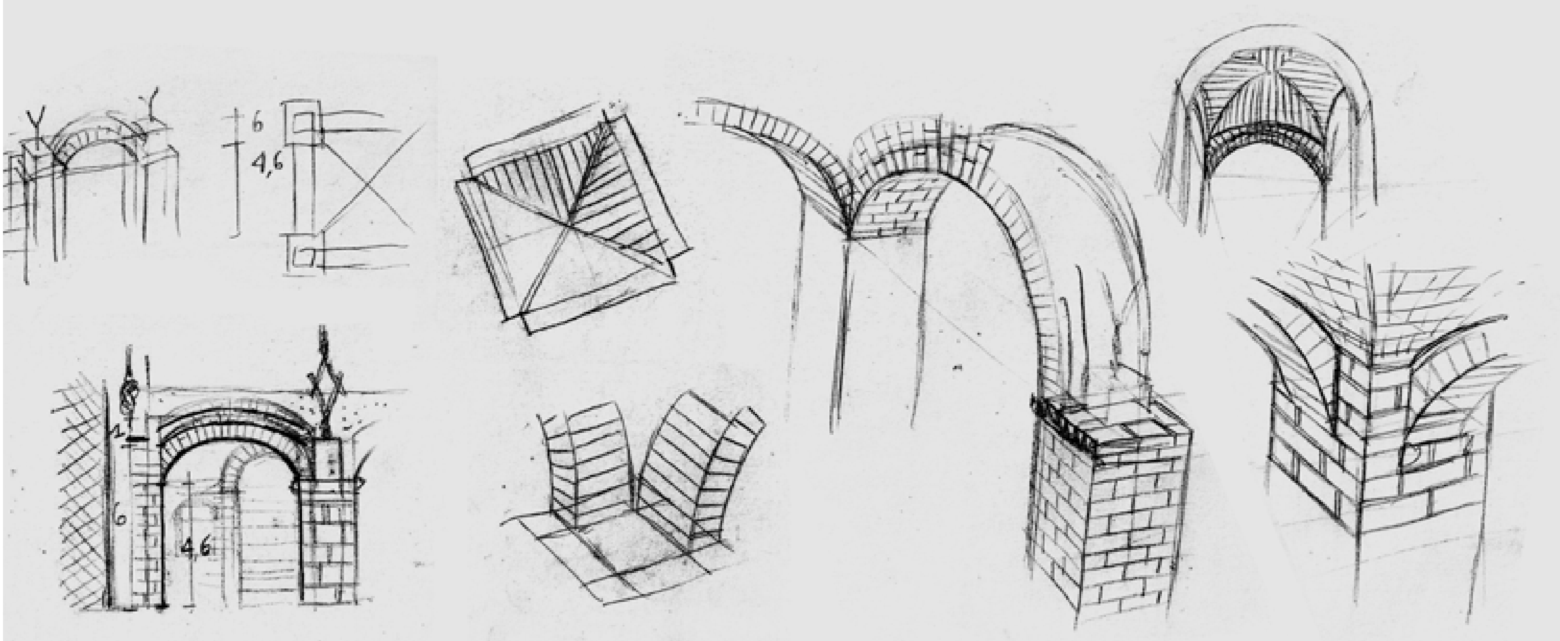
The construction technique is very simple and follows the same pattern used for the walls, with the difference that these bricks are bigger and made of stone Even the “mortar” is the same: the omnipresent vinyl glue that fixes and holds everything and that I hope keeps its properties unchanged over time.

I start laying the first row of stones at the base of the pillar, taking care to cover entirely the concrete slab. Stones length is variable, so sometimes I insert smaller pieces, trying to keep the courses horizontal despite the irregularity of some cuts.

My intention is to create a pillar with poorly finished blocks. Having a purely structural function, this element doesn’t need to look too elaborate.







In fact it will not even have a capital, but only a thin frame that will act as a support for the arches and vaults (as you can see in the studies above).

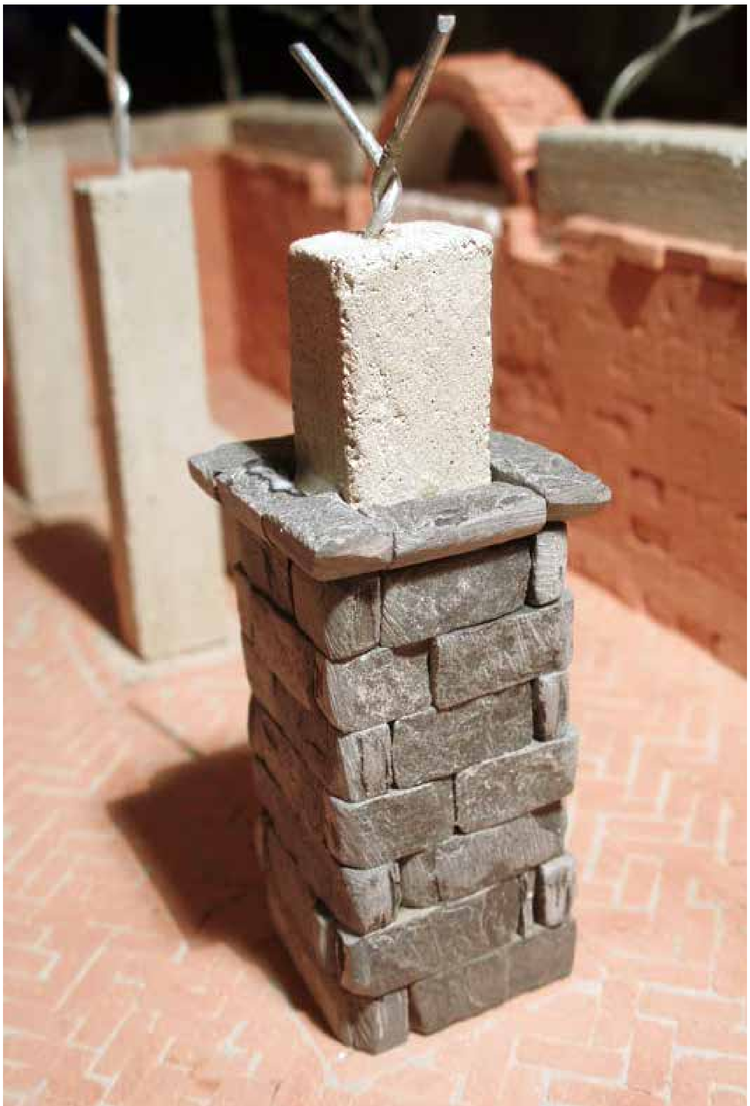
Once the established height is reached and the last stone is placed, all I can do is plug holes and cracks with cement grout, and the first pillar is finished.

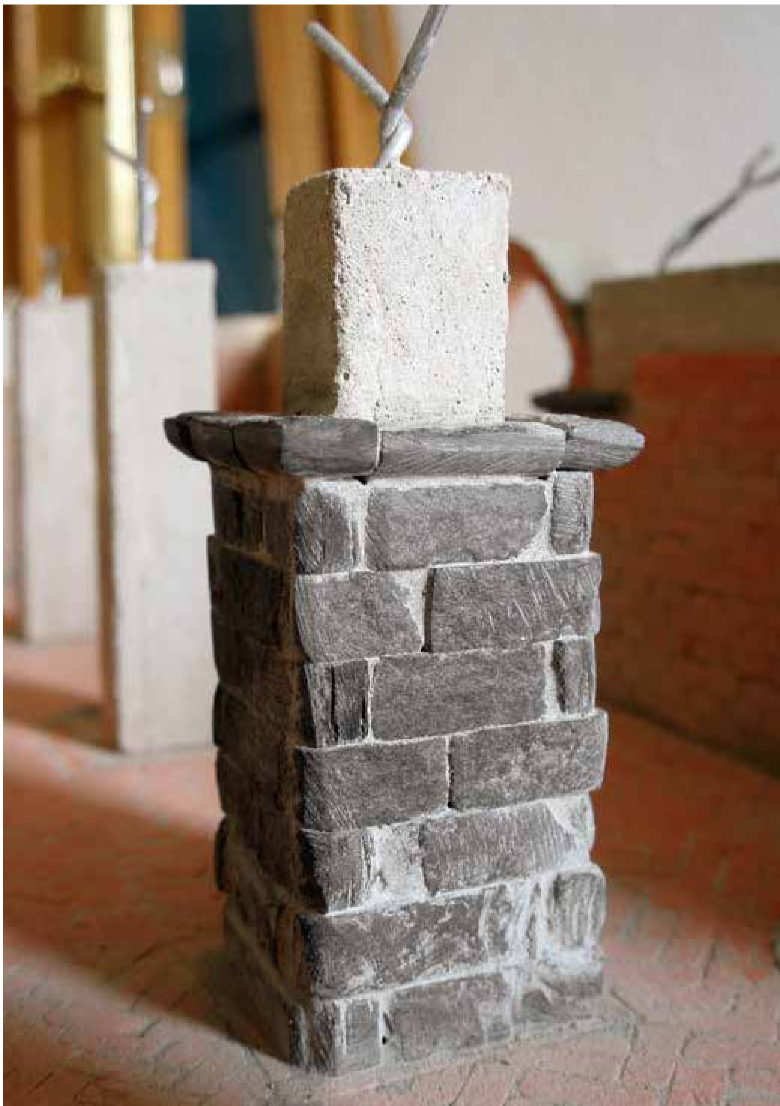
The second will follow...

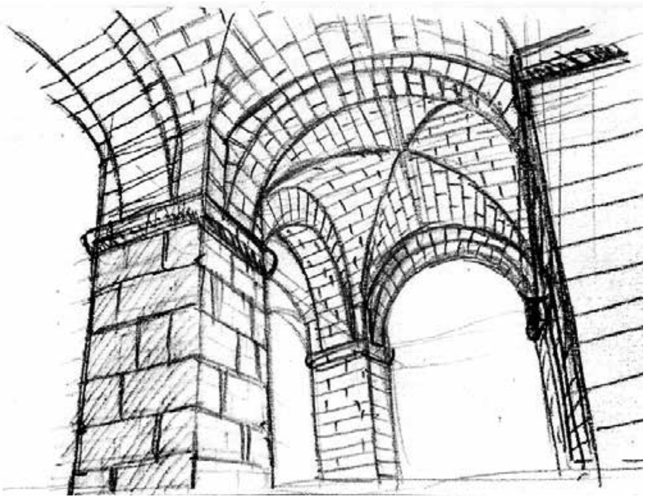
MATERIALS:
slate, vinyl glue, cement, water

TOOLS:
tweezers, pincers, sandpaper, Dremel tool with diamond cutting wheel, putty knife

SIZES (in mm):
base: 24 x 24
height: 47 (shaft) + 4 (frame)
frame: 28 x 28 x 4
blocks: 6 x 6 x 12 (av.)

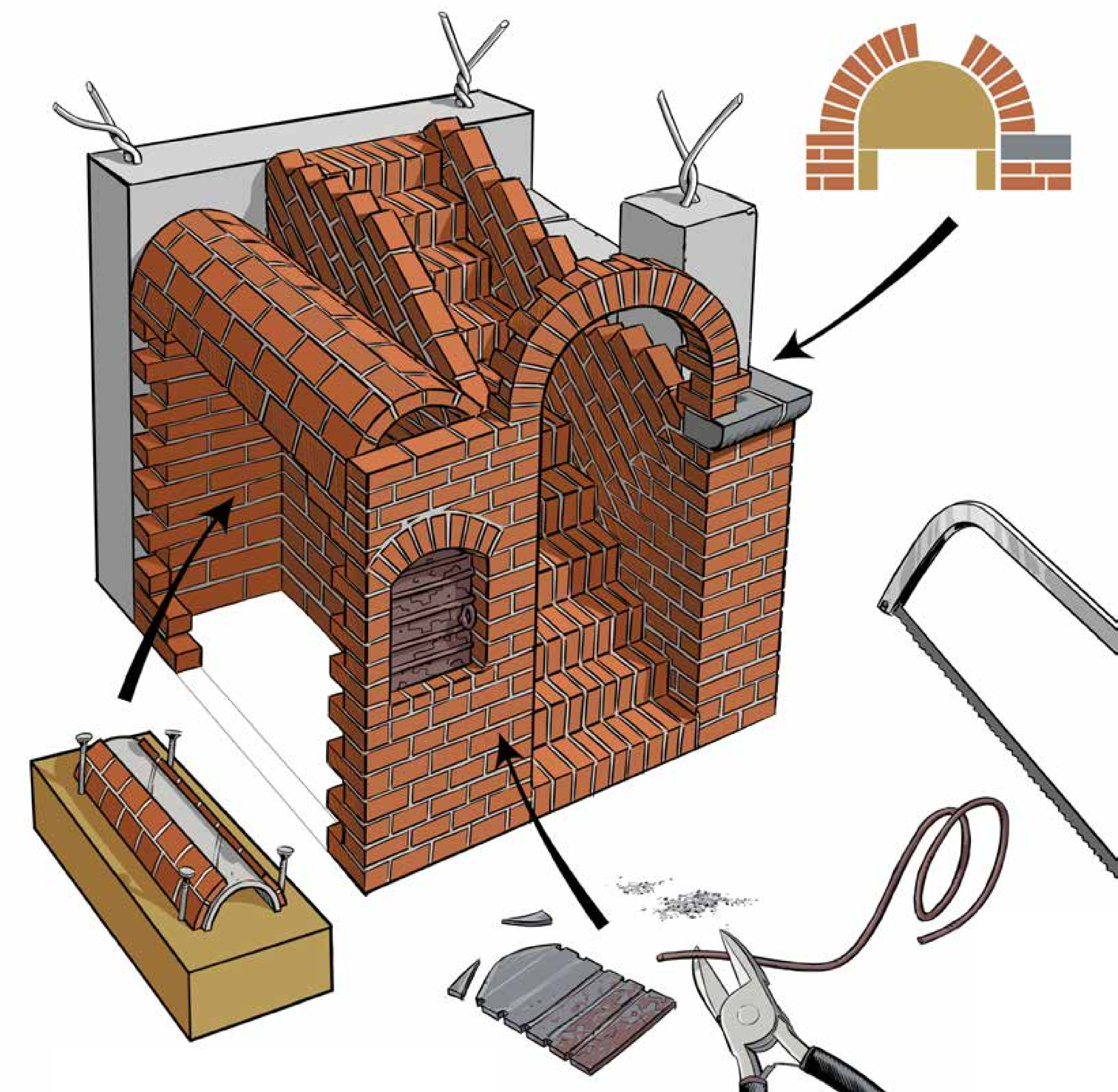






Chapter 12

WATER CISTERN



As the construction of the basement goes on, in addition to the tunnel and the side arch, I decide to insert another element not planned before: the **water cistern**.

It will be placed on the right of the flight of stairs that leads from the ground floor to the cellar. The cross vault covering this part of the basement will be equipped with a trap door to allow the movement of a bucket directly from the upper floors. This obviously to ensure that the poor servants do not have to climb the steep stairs with a heavy load every time the lady wants a glass of water.

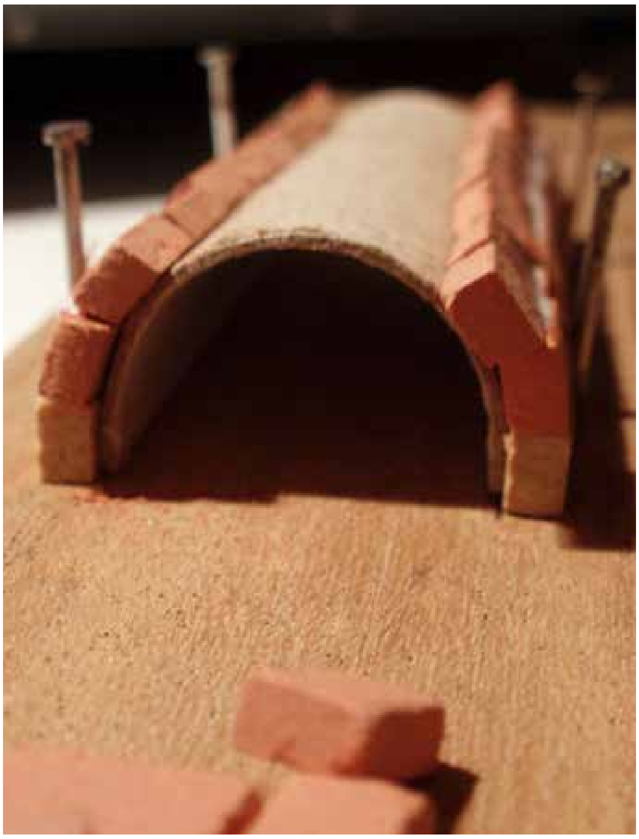
Unfortunately at this point of the work the position of the stairs does not allow me to build the cistern in a straight line with the hatches of the upper floors, so someone will still have to go down to the cellar to

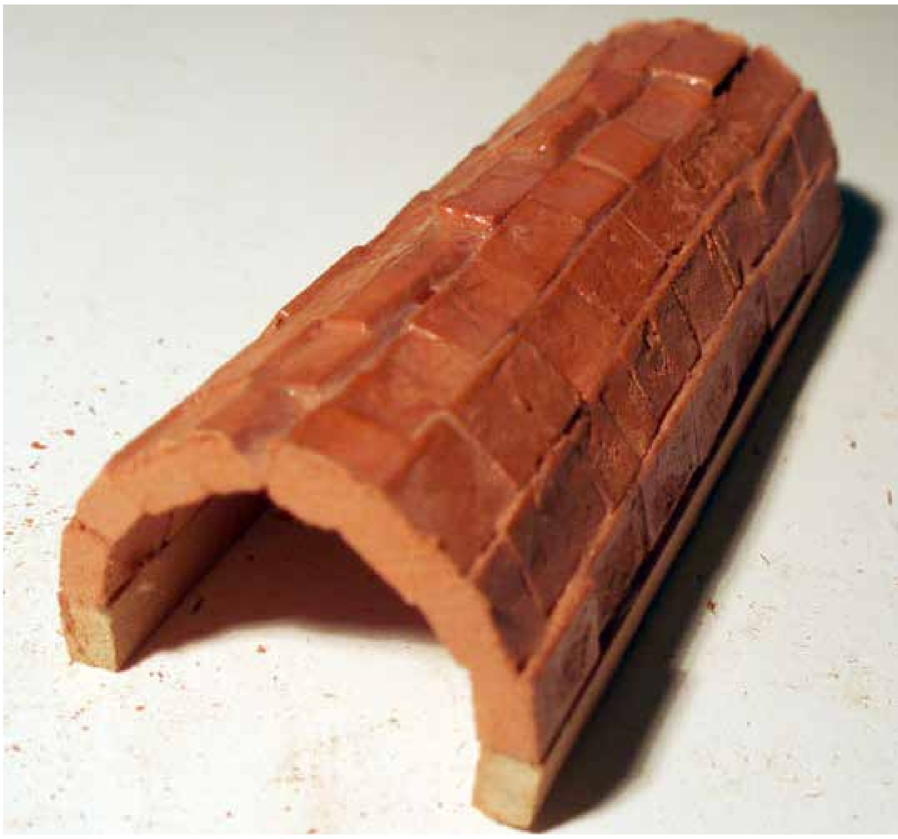
dip the bucket into the water.

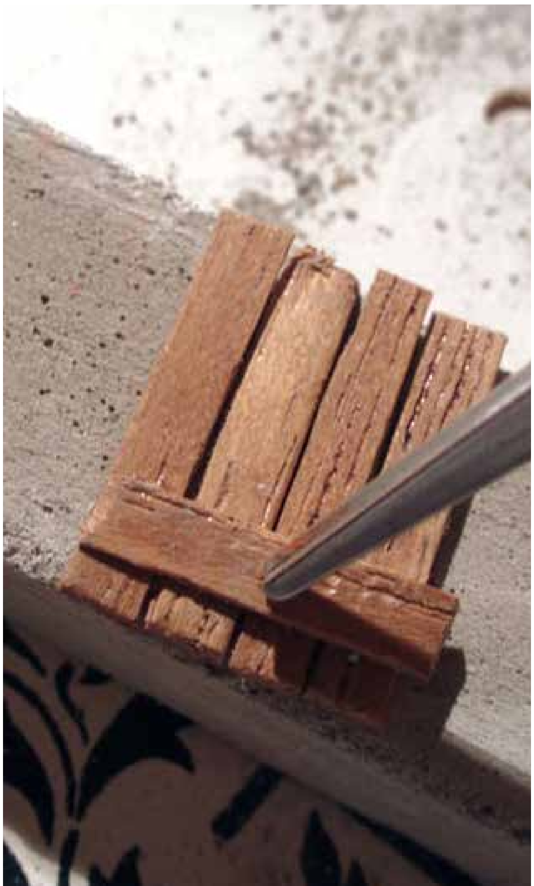
The interior of the cistern has not been studied in time, which forces me to “cheat” by inserting wooden posts to support the roof vault. Anyway the opening will be closed by a door and the inside, once placed the vault, will no longer be visible. The cover will be another barrel vault, but as I want to differentiate it from the first one (built over the tunnel) I make it by laying the bricks flat.

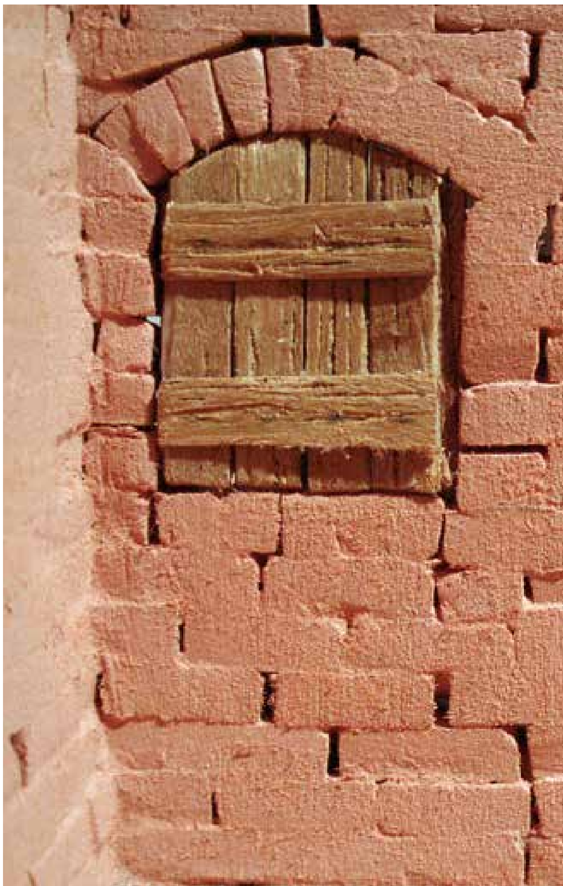
As far as the construction of the door is concerned, I realize a wooden piece that I replace later with an iron door made with a rusty plate collected on the beach.

First of all, I cut the shape of the door with the hacksaw (at least this time I use it for its original purpose). Then, once made a series of grooves on the



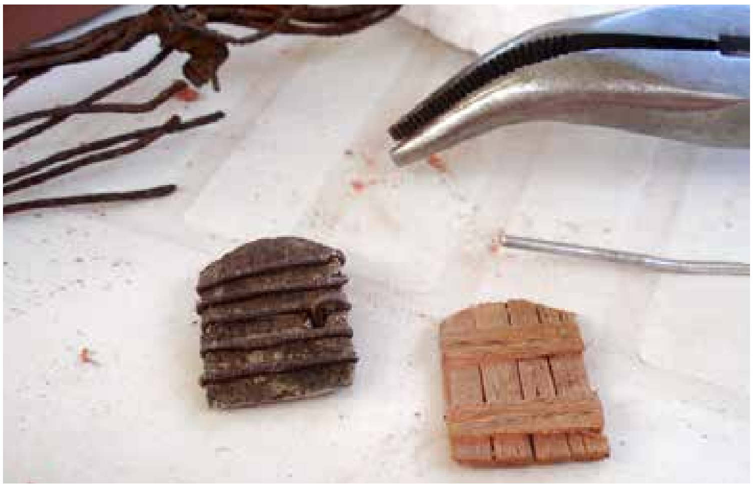


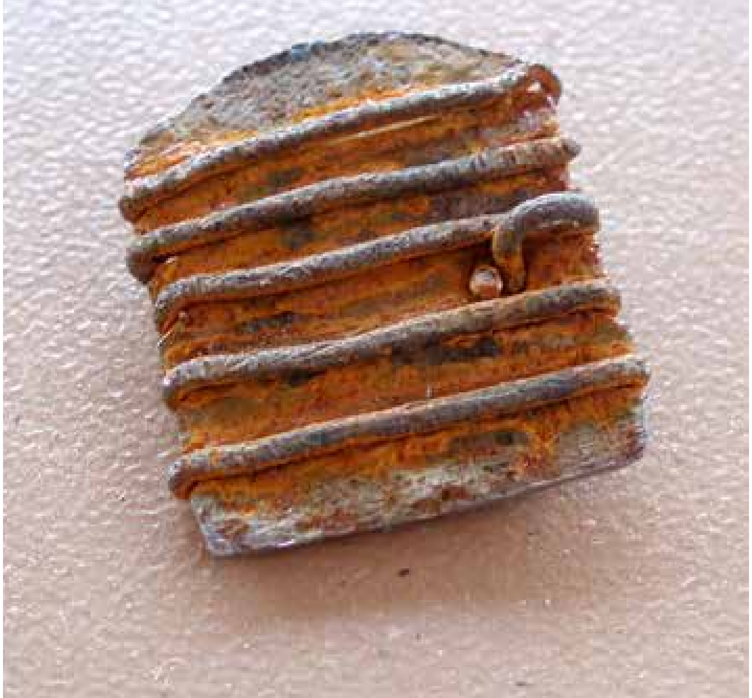


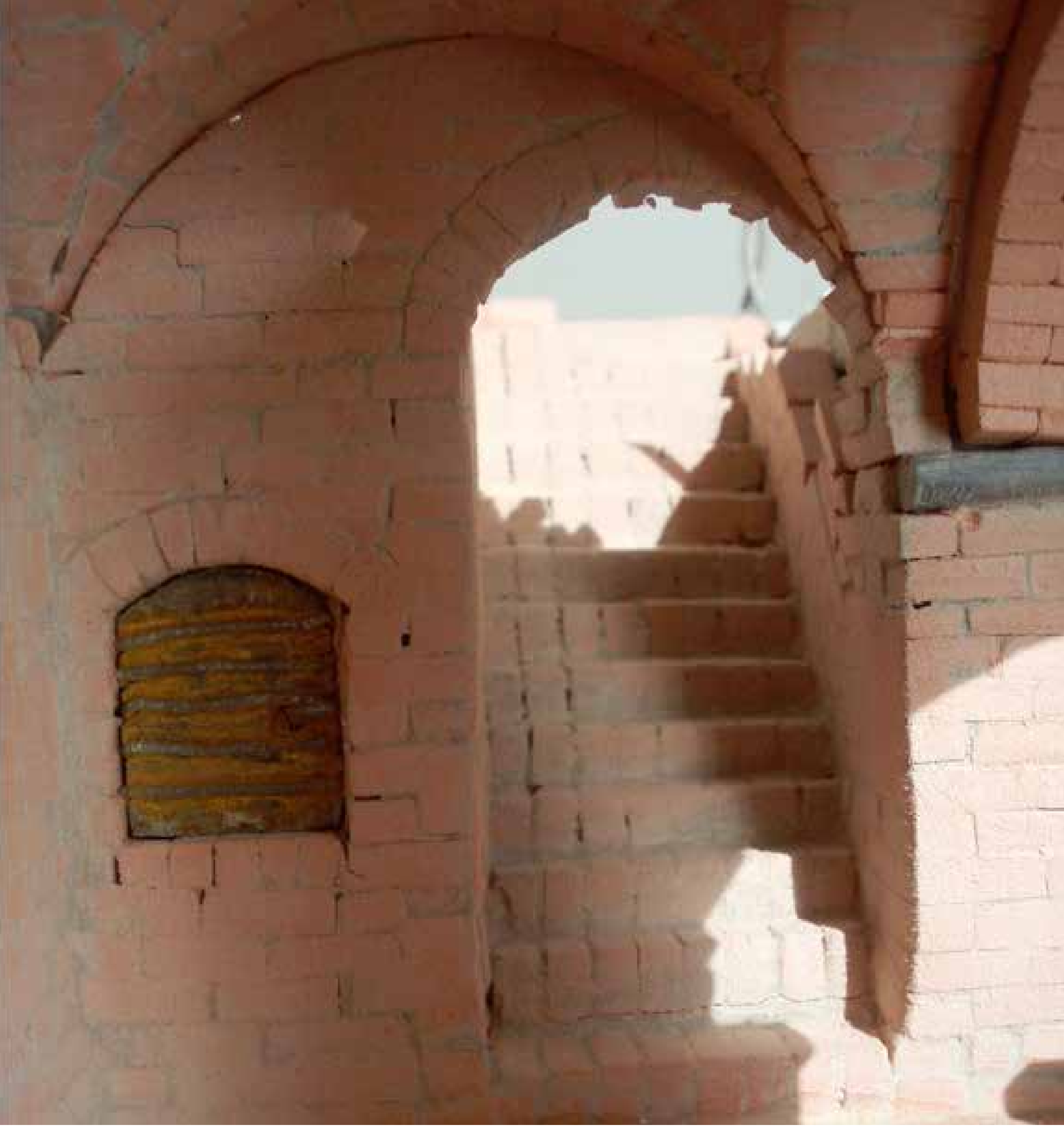


edges, I wrap around it some wire to get an effect that recalls the horizontal joints between metal bands. I open a small hole on one side, adding a ring as a handle. Finally, a bath of a few days in a solution of water and lemon to complete the coat of rust ... et voila!

Perhaps I'll end painting it, but there's still time for that...







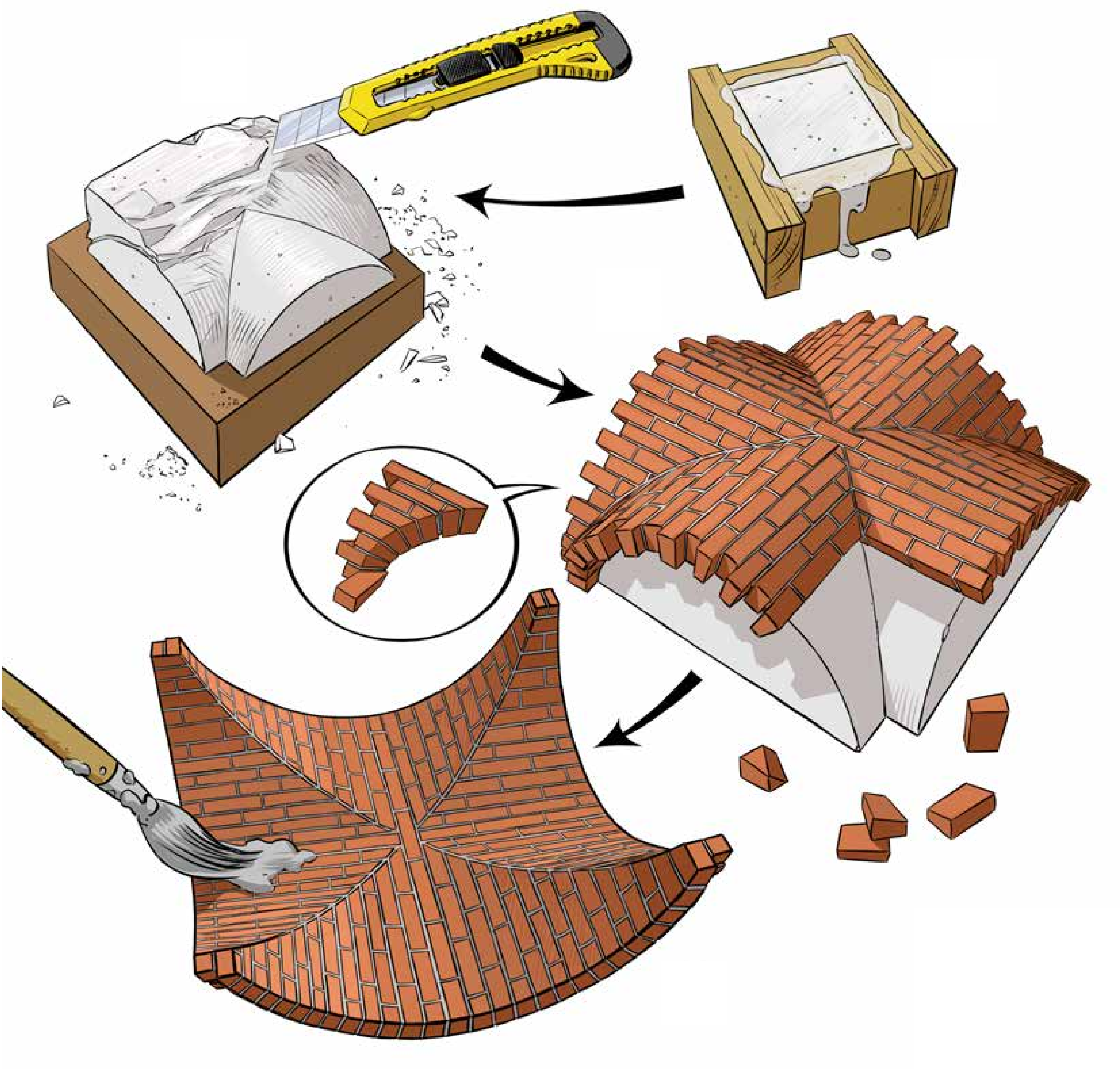
MATERIALS:
Das bricks, vinyl glue, wood, iron plate, cement, water

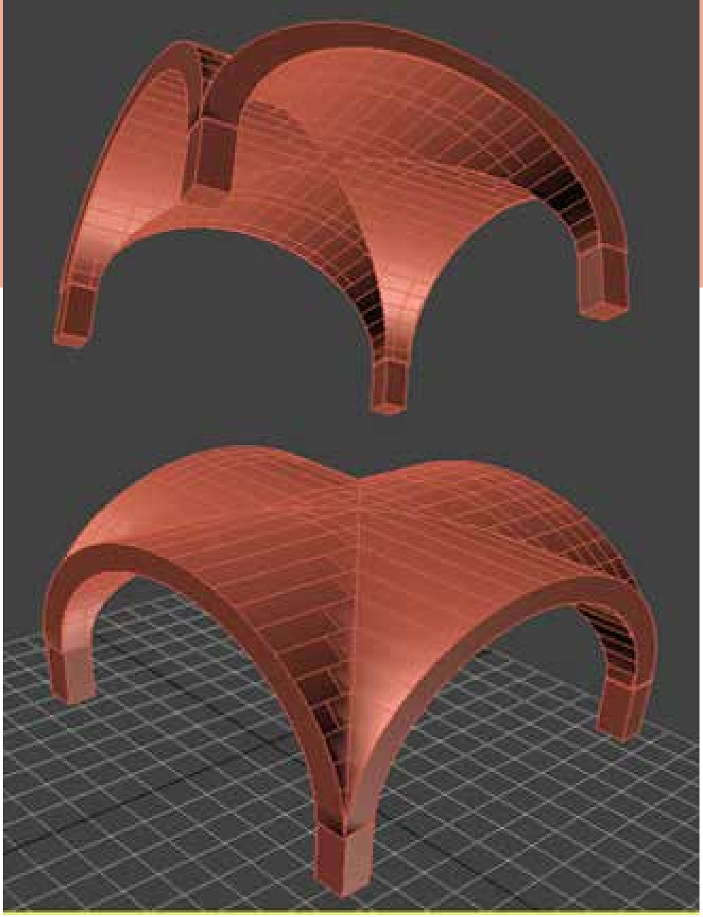
TOOLS:
tweezers, pincers, sandpaper, wooden board, cardboard roll, nails, hacksaw, cutter, putty knife, water, lemon

SIZES (in mm):
opening: 14 x 14 + arch
arch height: 3,2
inner perimeter: 76 x 27 x 40 (vault base)
vault height: 10,5 (int.) 13,5 (ext)

Chapter 13

BRICK CROSS VAULTS





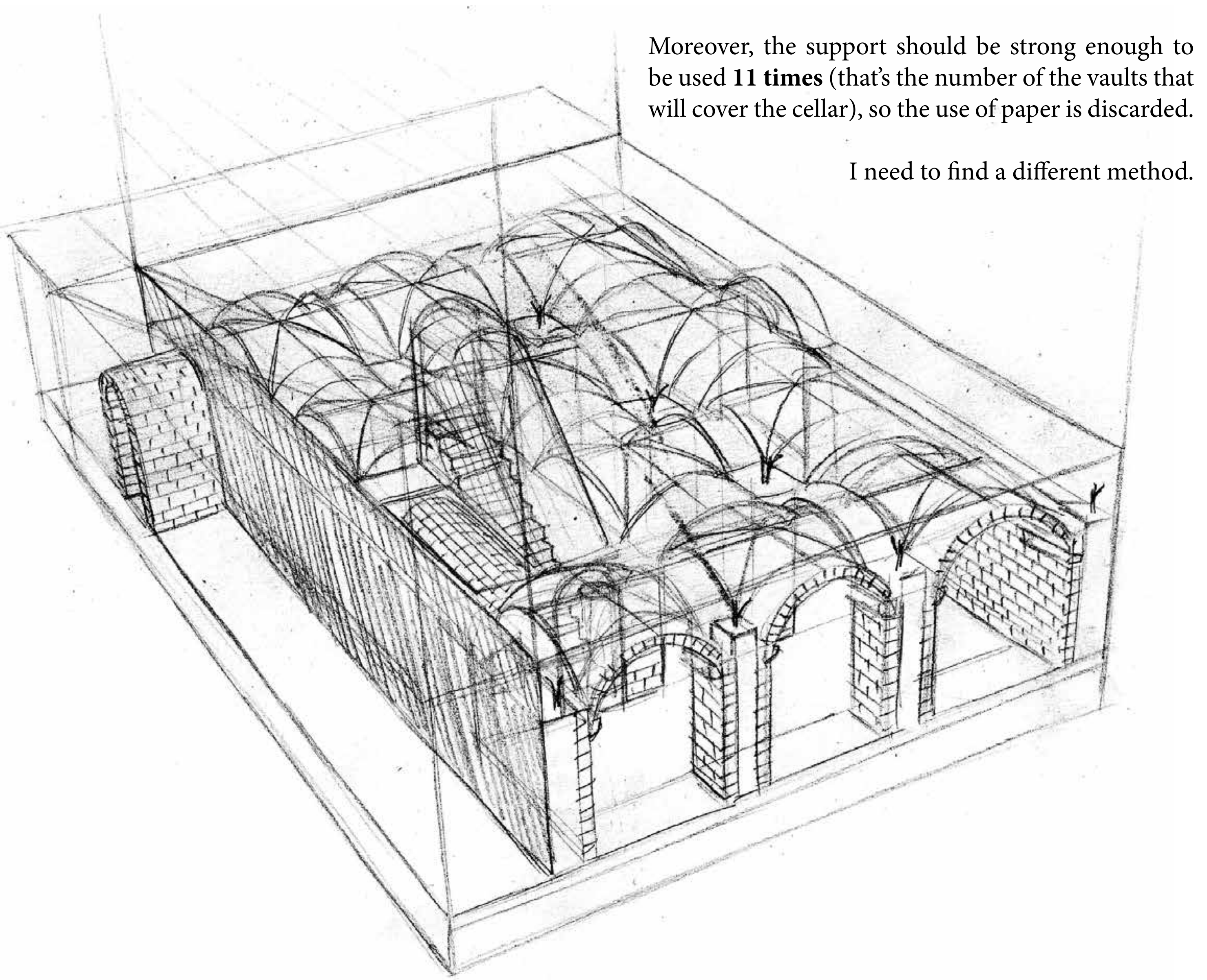
The construction of the cross vaults has been one of my main thoughts since the beginning of the project, both for its emblematic status inside the building, and for the greater level of complexity if compared to the pieces made so far. Its necessary repeatability also converts this element in a sort of check point: if I'll not be able to pass it (something initially not obvious at all), the construction of the Domus **cannot go on**.

Like any other vault, the cross vault is built on a temporary wooden structure which after the laying of the last brick can be reused for the construction of more vaults, allowing the reproduction in series of the architectural element. In my case, the first difficulty is the fact that while for the barrel vaults I used a simple cardboard roll as a support, the structure on which I'll have to align the bricks for the cross vault will need to be shaped more accurately.

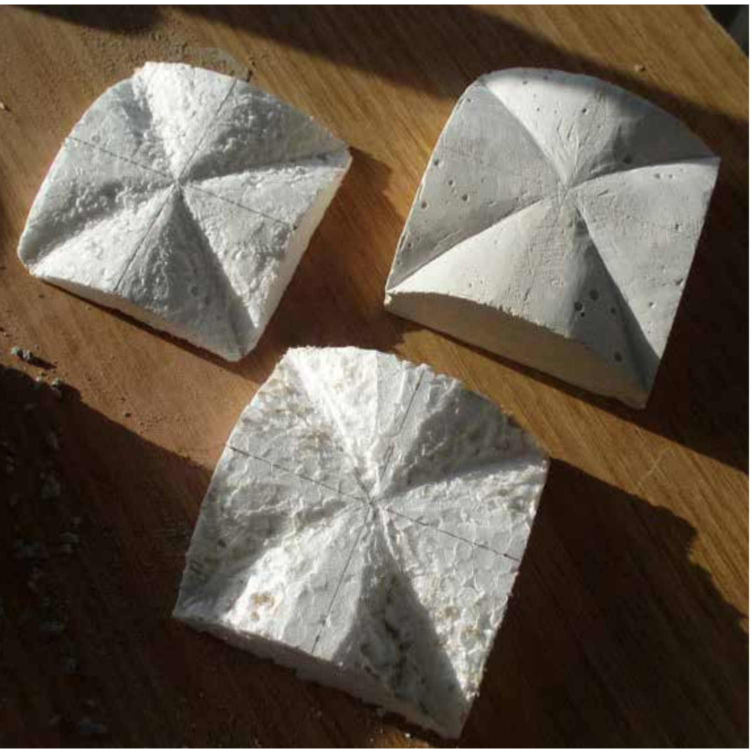
Speaking of geometry, the cross vault is nothing more than the **intersection of two barrel vaults**, so my first thought is to join two rolls so that the curves fit together, but I soon realize how complex this operation is.

Moreover, the support should be strong enough to be used **11 times** (that's the number of the vaults that will cover the cellar), so the use of paper is discarded.

I need to find a different method.



Another hypothesis takes into consideration the use of **silicone**, for which I should first build a mold. I don't have much experience in this field, and although tutorials and tips to make silicone molds are easy to found on the web, I choose to give priority to other solutions, including manual carving of the vault in an easily workable material. Yes, it's a slower method and could be considered as a work in itself, but I think it could allow me to have more control over what I'm doing. The question at this point is: what material should I use to get the best result?



After a couple of disappointing cutting tests on polystyrene (both cold and hot), I try to switch to **plaster.** I accidentally have a big bag that the workers left on the terrace after recent renovations, and trusting that nobody will miss it, I decide to take advantage of the situation.

After making a small block with a wooden mold and leaving it to dry for a couple of days, I begin to work on it with a cutter as if I were peeling a potato and scraping off the excess material layer by layer.

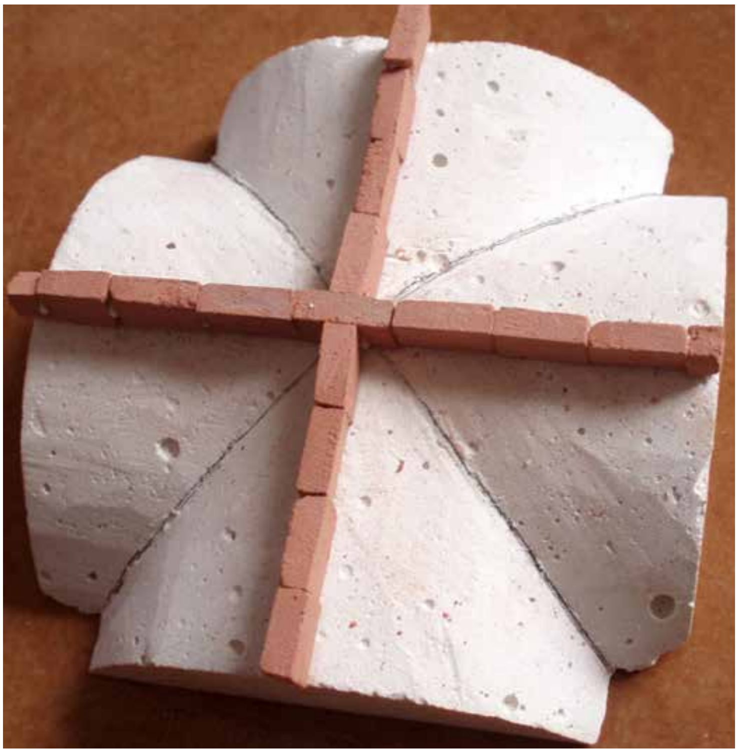
Despite my efforts the first attempt is disappointing due to the reduced height of the starting block. (it's the piece on the right in the picture). I put it aside without finishing it and repeat the operation with a thicker block.

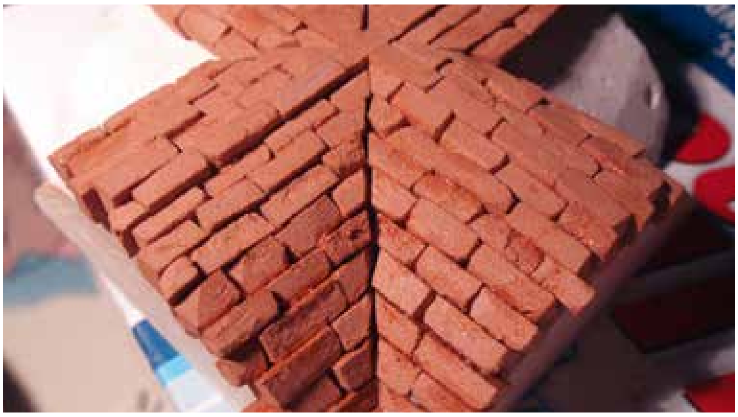
This is the right time!

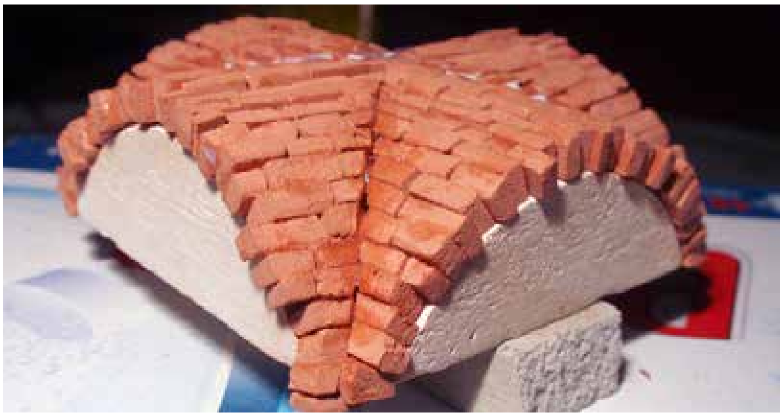
Now that the centering is ready I can start laying bricks. It will be a long night ...

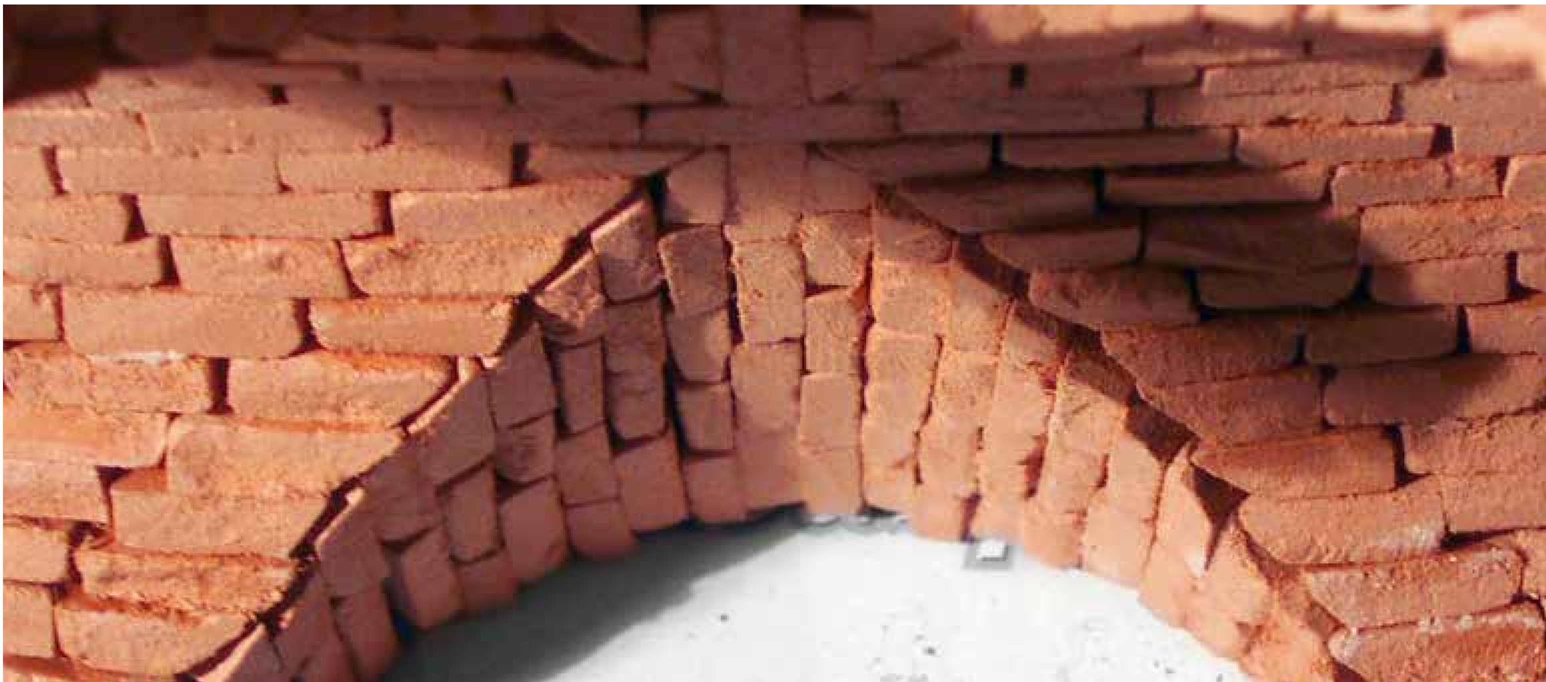
I'll use the same Das bricks made to compose walls and floor, gluing them together with the usual vinyl glue (enough glue to get a strong structure but not too much, to allow the removal of the plaster base at the end of the work).

While in a real construction the laying of bricks would start from the bottom and from each side to converge at the center of the arches, working at this









scale is much more comfortable to start from the top, forming a cross that will then be the backbone of the vault.

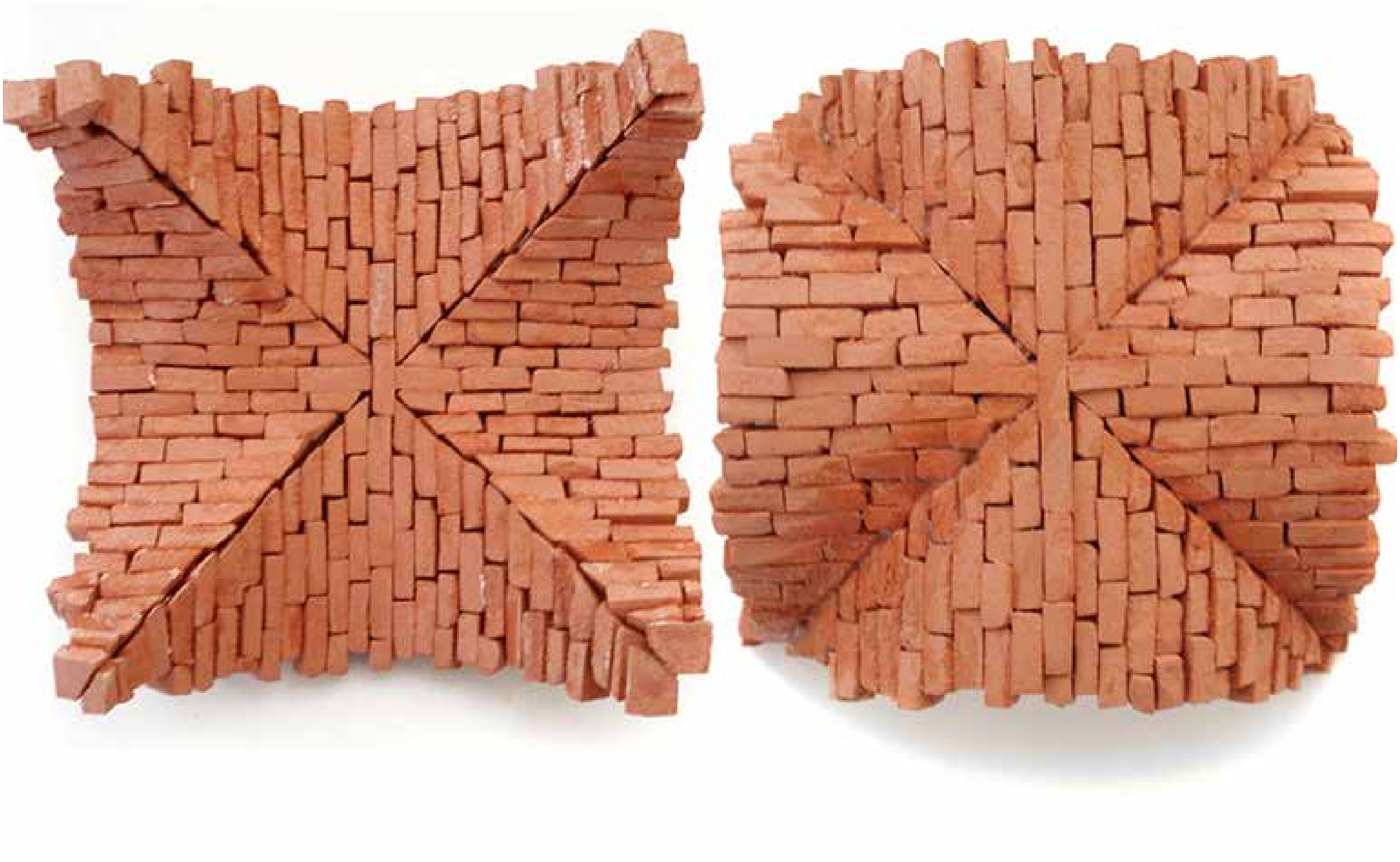
These first bricks are regularly squared, while starting from the following rows they'll have a slightly trapezoidal shape to better follow the curve of the vault.

Where two slices join together, I cut the bricks diagonally according to a certain inclination (different from line to line), so to follow as accurately as possible the corresponding bricks of the adjacent arch.

This is possibly the hardest operation to build my cross vaults, but it can be easily solved with some practice. Let's say that, when the basement covers are completed, I'll have gained some experience in this regard.

Once the assembly is done, the vault will still need some finishing touches: the excess bricks on each sides must be cut and the inner surface need to be polished and grouted...

However, we'll see it better in another chapter. For now I'll just admire the work done, trying to find the strength to build the remaining 10 vaults!



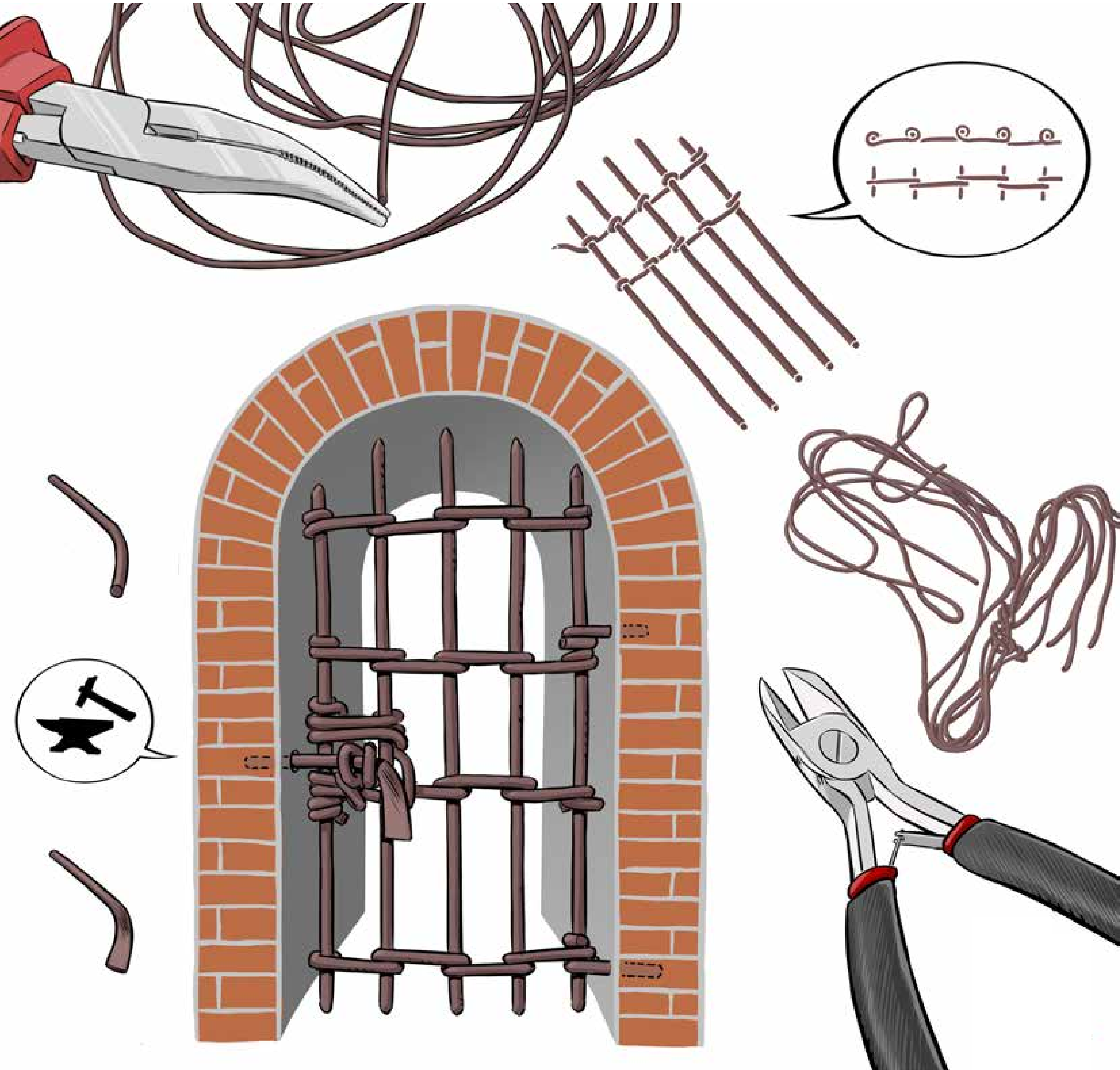
MATERIALS:
plaster cast, water, Das bricks, vinyl glue

TOOLS:
wooden slats (for the mould), sandpaper, cutter, tweezers, putty knife

SIZES (in mm):
plaster base: 68 x 68 x 20 (h)
arches: 54 x 20 (58 x 26 after further extension)

Chapter 14

IRON GATE



Three rolls of **iron wire**, of different diameters and colors, picked up in the street in three different places... What do they have in common? But it's obvious! All were chosen to join the Domus project!

A short time after the beginning of the construction, I started looking around for old rusty wires, thinking that they might be useful to make some additional elements. In fact I was thinking on the subject of this post, a gate to the underground tunnel.

To give it a realistic look it was necessary to use an old wire, darkened by time and even slightly oxidized. The wires commonly found on sale are treated in such a way as to be stainless, and while for the common customer this is undoubtedly an advantage, for me it was not.

These are the three kinds of wire I gathered:

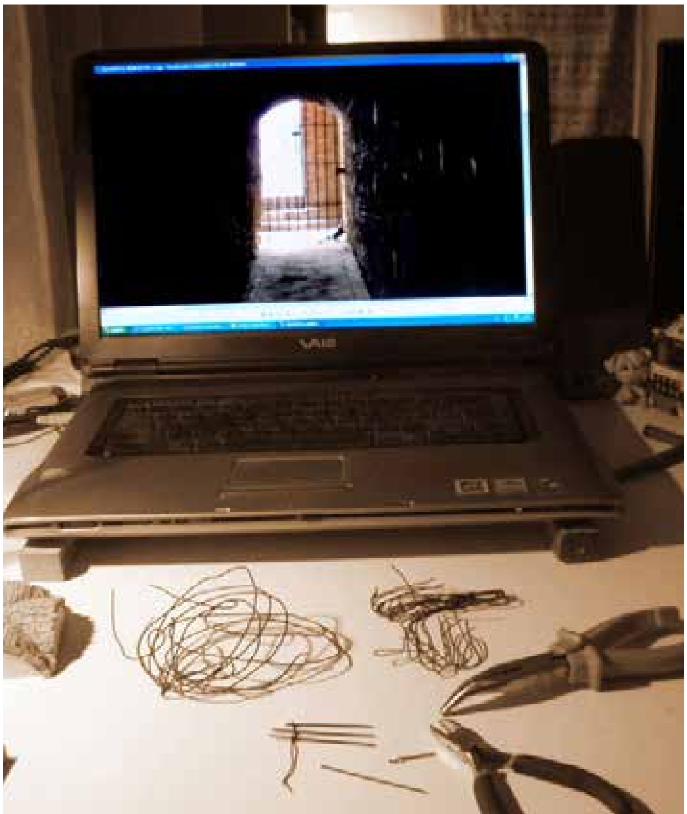
- A thinner and more rusty one, picked up last summer near the railway station in Lavagna (Italy);
- A thicker one, found on the street in Granada (Spain);
- A gray one, thick but easily workable, found in a bag of debris in Barcelona (Spain).

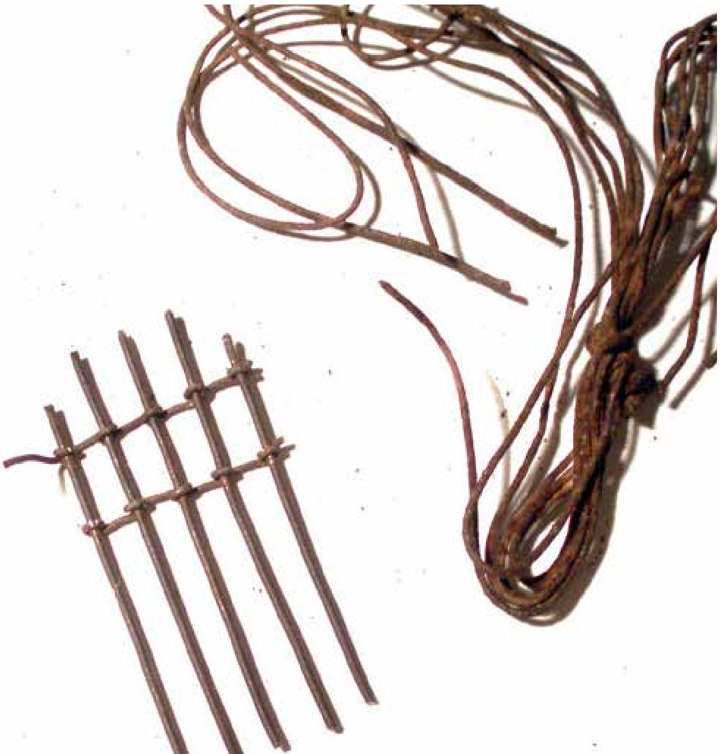
For the construction of the gate I will only use the first two, leaving the third one for future use.

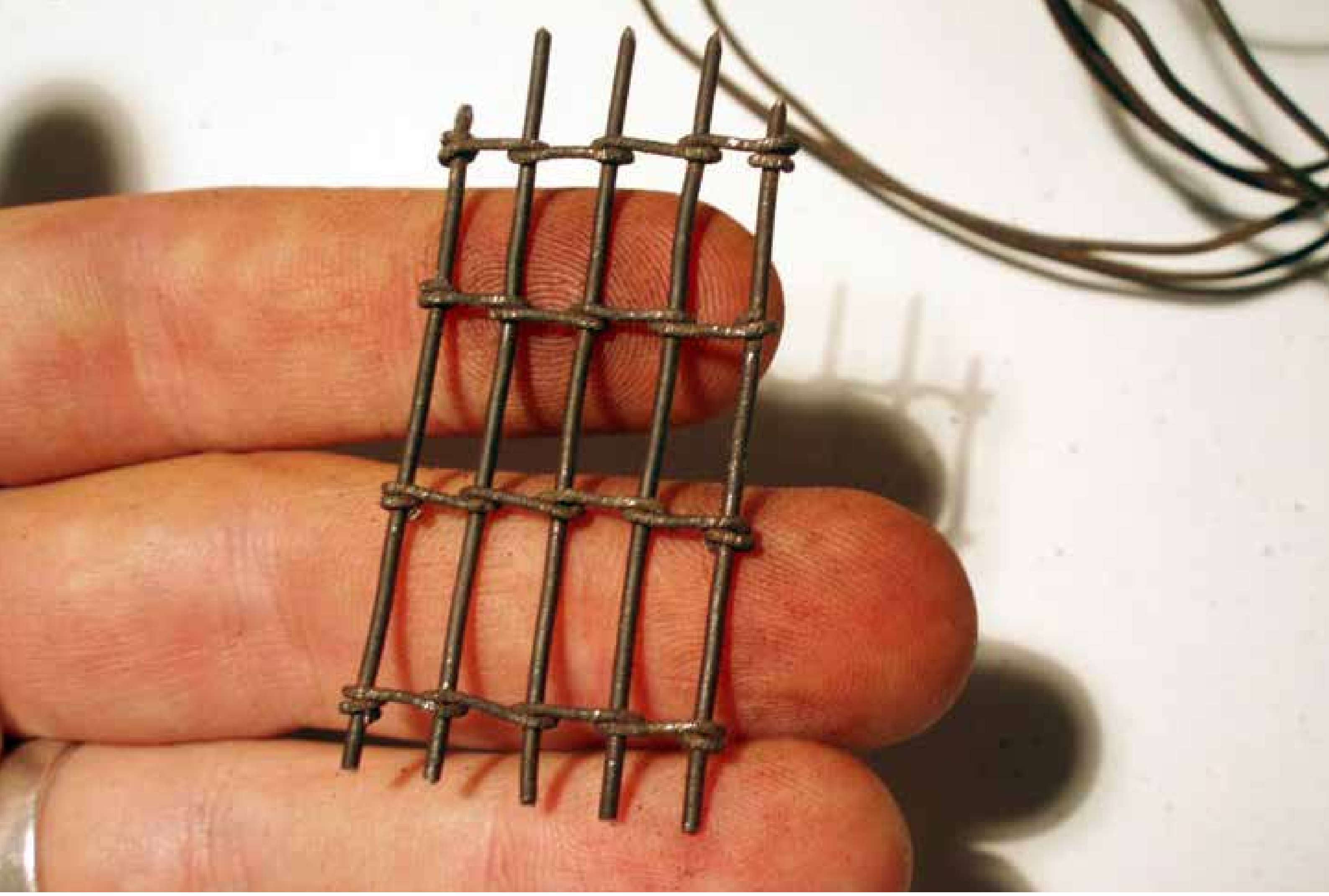
So, I start the first working session opening an image on my pc as a general reference. It shows a corridor of the Alhambra, the medieval citadel of Granada. I hope it works as an inspiration.

I cut the thicker wire into bars just below the height of my **tunnel** (see chapter 9 for more details), and I join them with the thinner one. As I can't use a soldering iron (I don't have it!) I work to knot the different parts as best as I can, helping myself with pincers. After the first rough attempts, I get the hang of it, and mounting the full gate is not such a hard challenge. The only reason for apprehension is given by the distance between the vertical bars, that must be constant.

The lock and the hinges that will fix it to the wall are still missing. I make the bolt by bending a piece of wire that was crushed at an end, remembering the shape of a handle. In the future I'll reproduce that



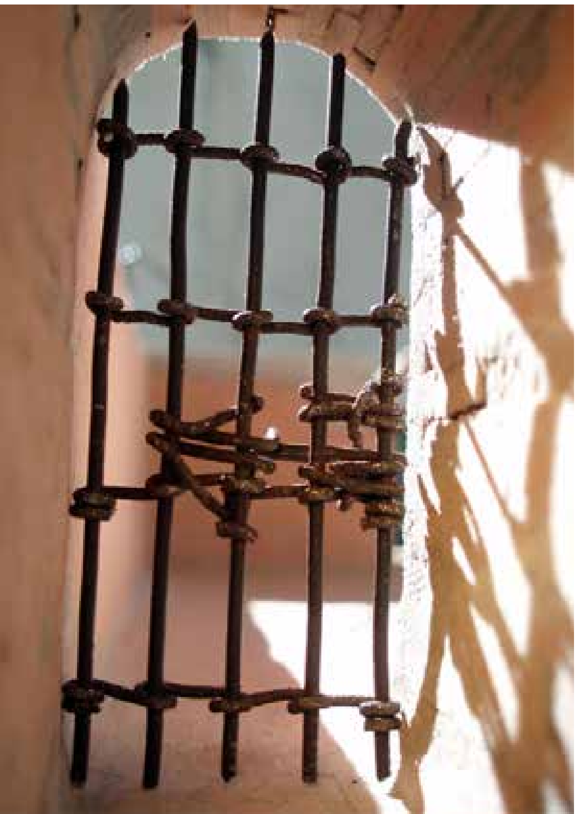


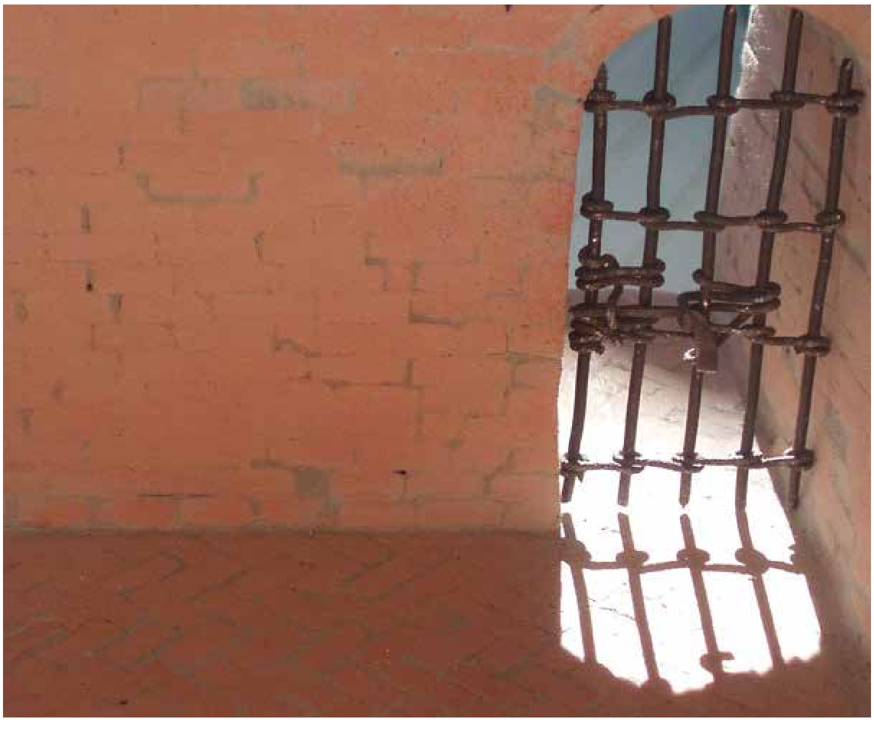


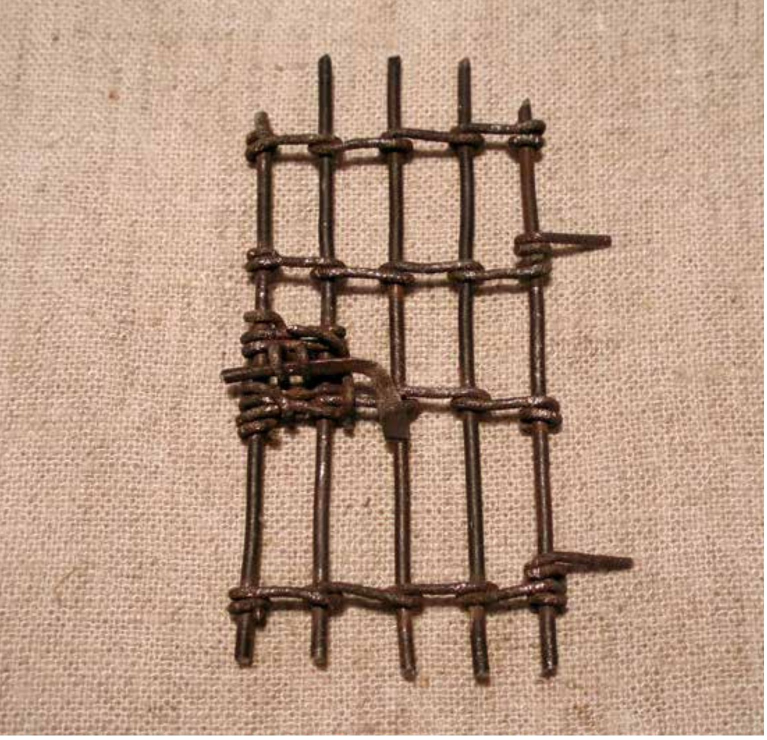
same effect by beating the iron on a small anvil.

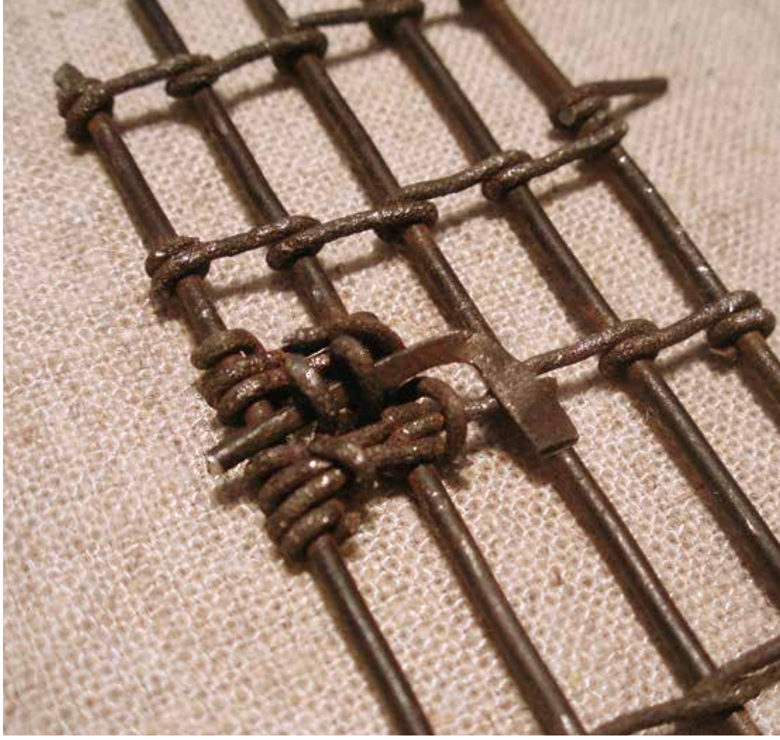
With the remaining wire I build the loops for the bolt. They look a bit rough in these pictures but I'll reduce their size later. At this point I try to insert the gate in its place to see if the effect is convincing.

I declare myself satisfied and proceed with the final touches, before the final assembly (that will take place when the wine cellar is finished).
Here is a small preview of what the tunnel will look like at the end of the work. It resambles the Alhambra's gate a little bit, don't you think?









MATERIALS:
old iron wire

TOOLS:
tweezers, pincers, pliers

SIZES (in mm):
bars: 52/46 x 1 (diameter)
gap between bars: 5
height of the bolt: 23

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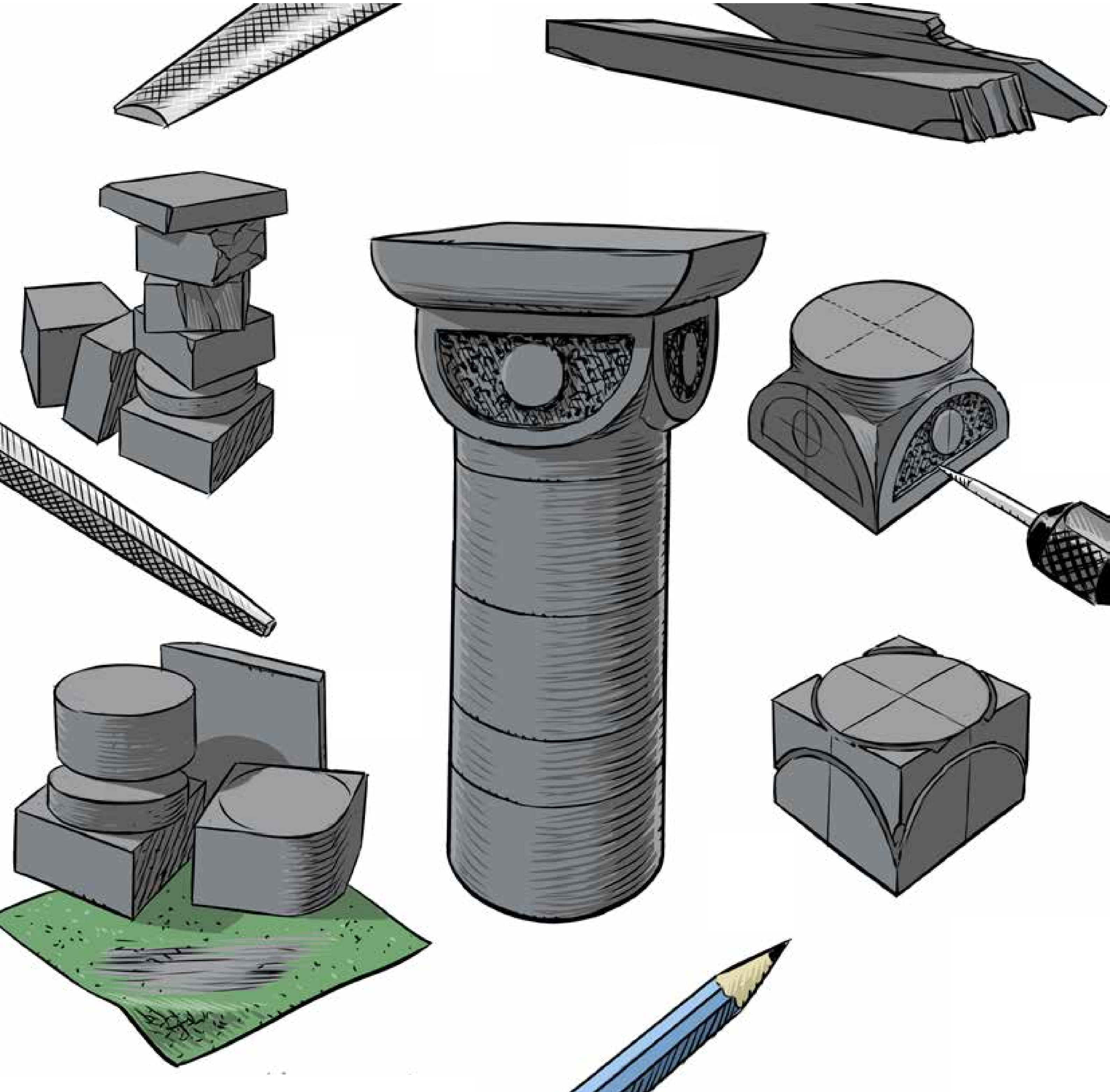
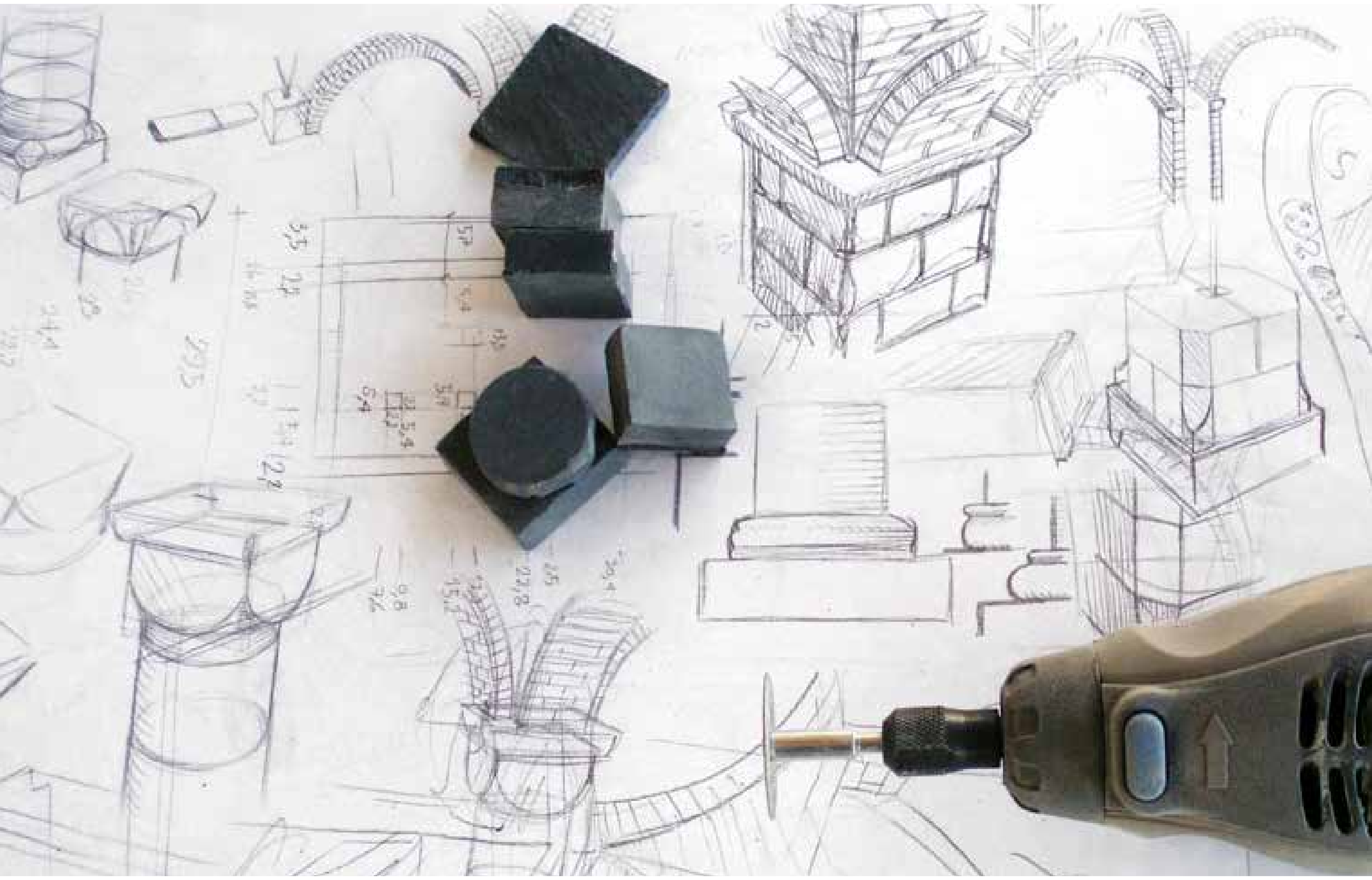
Chapter 15

STONE COLUMNS



After making the first two stone pillars (see chapter 12), I find myself forced to temporarily suspend the work for bureaucratic issues that bring me back to Italy. When the construction site reopens a few weeks later, I immediately finish the second pillar, but instead of continuing with the following ones as scheduled, I decide to make a small change to the project. Repetitive things bore me, and making two more pillars the same as those already made does not stimulate me much. In addition, the new documentation found suggests me new solutions such as the use of **stone columns** fully made of stone, with base and carved capitals.

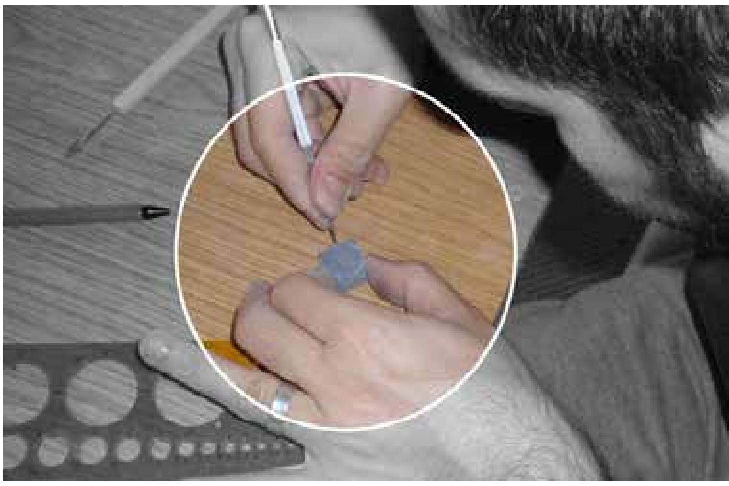
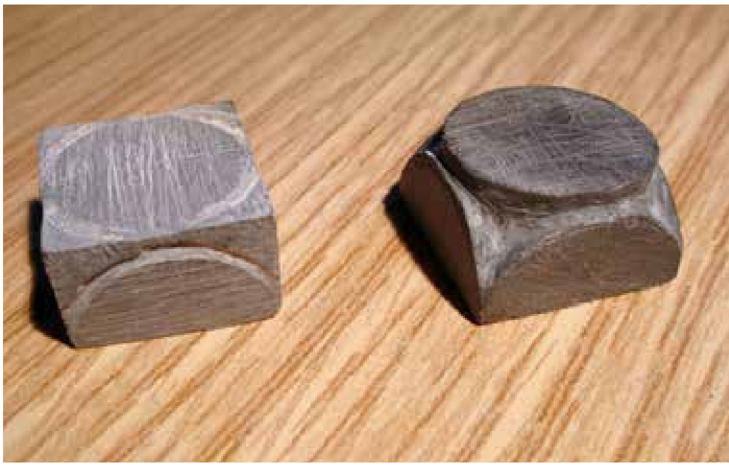


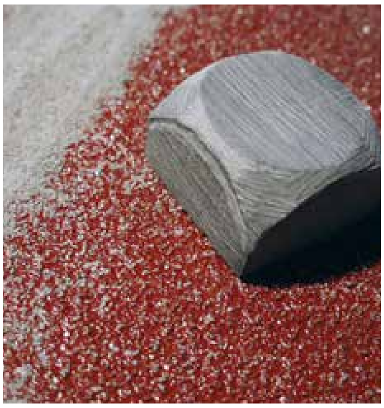
The segments that will form the first of the two columns are cut with the Dremel tool, partly taking advantage of some slate scraps that are already cut in the shape of a half circle. The sum of the various segments, of course, must correspond to the height of the pillars, as well as the width of the frame placed above them, on which the cross vaults will rest.

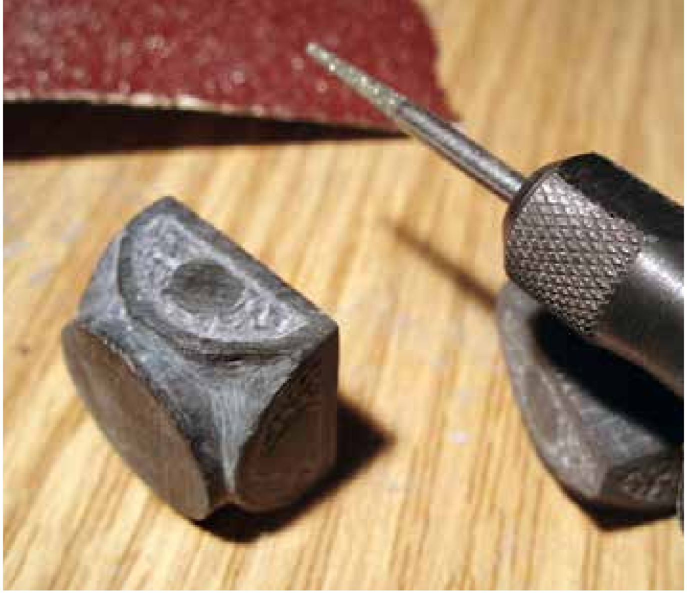
First I finish the pedestal, slightly smoothing the edges with sandpaper. Then, with the same paper and with a small diameter circular file, I engrave the base molding (a sort of torus / scotia / torus) and the cylindrical sections of the column. The working process is not particularly difficult although using rudimentary tools. Things get harder with the capital due to its more elaborate shape.

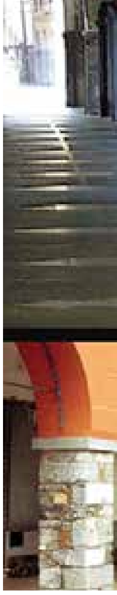
In this case I start by drawing on the square slate block with an awl, making a circle of the same diameter as the column on which it will be positioned. On each side I trace a semicircle, marking the areas that I'll have to "chisel" away to obtain the shape of the **spherocubic** capital. A first reduction of shape is obtained by scratching the stone on sandpaper, eliminating that way unnecessary edges, and then starting the real carving work with the Dremel and the diamond point.

Once the work is finished I test the capital on the column, making some small adjustments so that its profile perfectly matches the shaft. The column presents a slightly bulging shape that I like at first, but I will remove it in the end.







Before being able to glue the pieces together, two details are still missing: the carvings on each side of the capital and the addition of the upper frame.

For the first I use the diamond point again, working the stone superficially and trying to imitate the blows of a chisel. The frame is much simpler to make and can be finished with sandpaper only.

The work leaves me quite satisfied, perhaps more because it confirms me that I'm able to work on stone than for the aesthetic aspect. In fact some elements are not very compatible with the medieval architecture, in particular the molding at the base of the columns and the slightly bulging shape of the shaft remind me more to a late Renaissance.

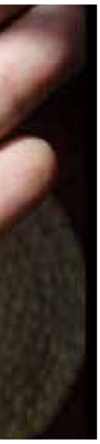
Initially I ignore these inconsistencies, but over time certain details seem to gain more and more weight to my eyes, until I decide to definitively rectify. With a few changes I should be able to 'medievalize' the columns avoiding that unpleasant feeling of error that I experience every time I look at them.

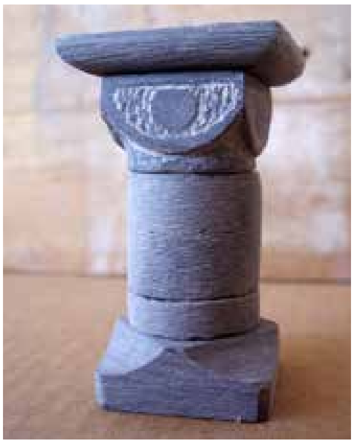
The model that inspires me for their correction comes from the observation of the medieval porticos of Chiavari, an ancient town architecturally similar to Genoa, of which it has been an extension and dominion for centuries.

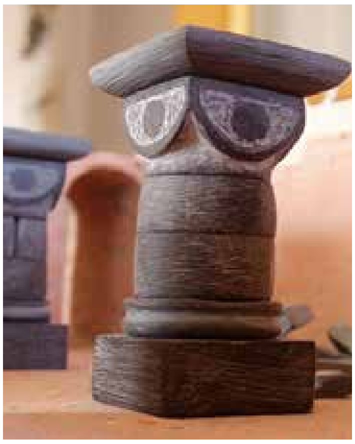
For the changes, this time I proceed with manual tools. After separating the pieces again, I remove the molding from the circular section bringing its diameter to the level of the shaft, which in the meantime have been worked with sandpaper to eliminate the bulging effect. Then I carve the corners of the base, first with sandpaper and then with a round file, obtaining a concave surface.

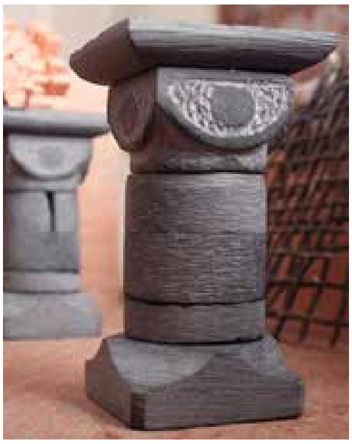
Once all the pieces have been reassembled with the vinyl glue, I can watch the "new" column.

Yes, the shaft is still a little big. True, the base is perhaps excessively wide. In fact, the frame also protrudes so much. I think I'll bring the columns back to the lab soon for further editing...







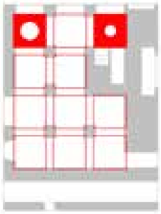


...

MATERIALS:
slate, vinyl glue, cement, water

TOOLS:
tweezers, pincers, sandpaper, files, Dremel tool with diamond cutting wheel/ diamond point, putty knife

SIZES (in mm):
upper frame: 25 x 25 x 4
capital: 19 x 19 x 10,7
shaft: Ø 19/20 x 21,3
base: 22 x 15



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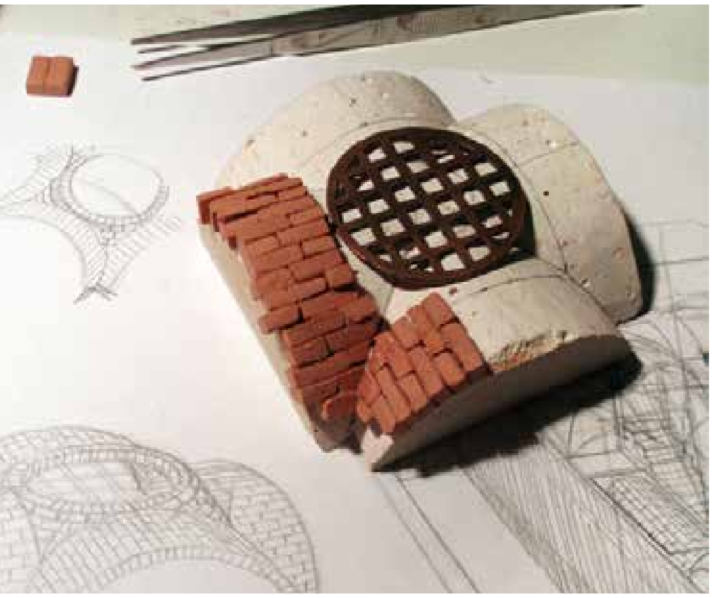
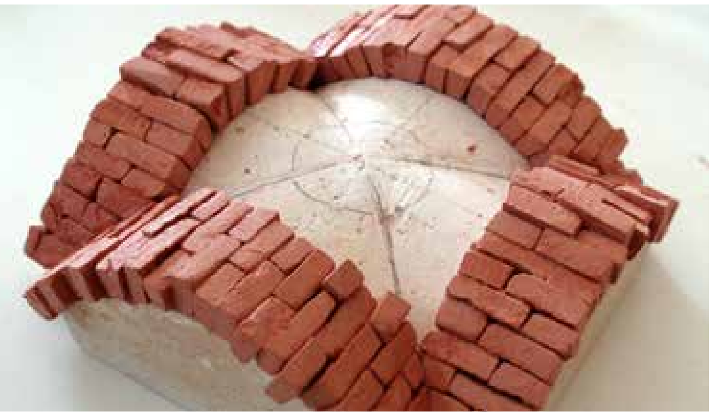
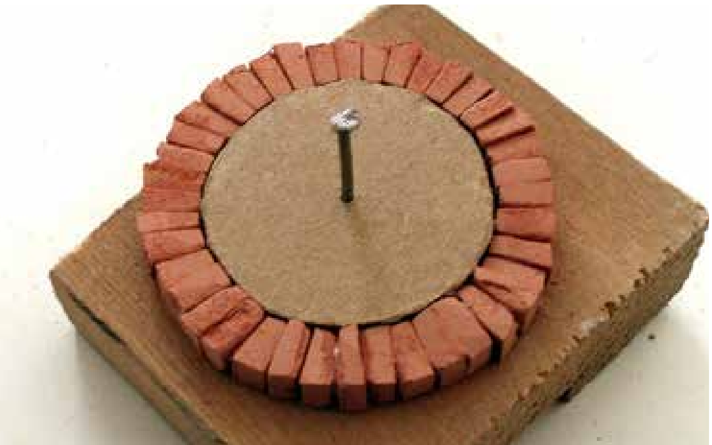
Chapter 16

HOLED CROSS VAULTS





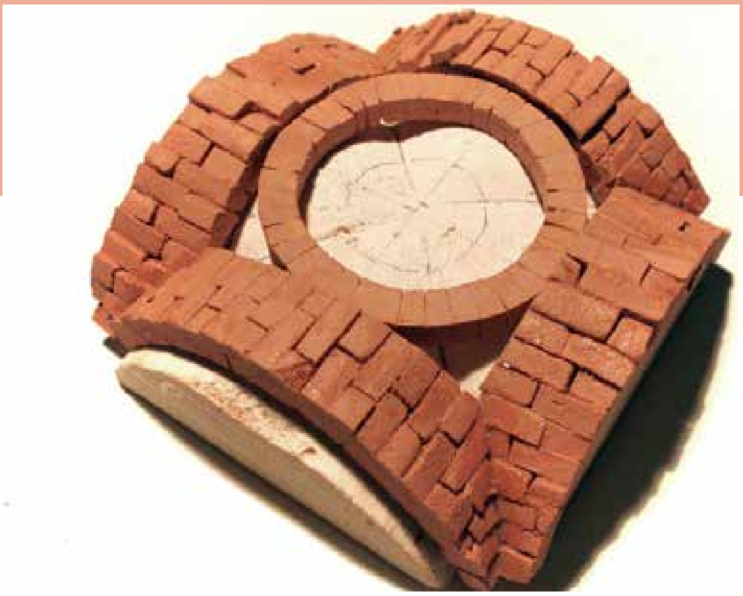


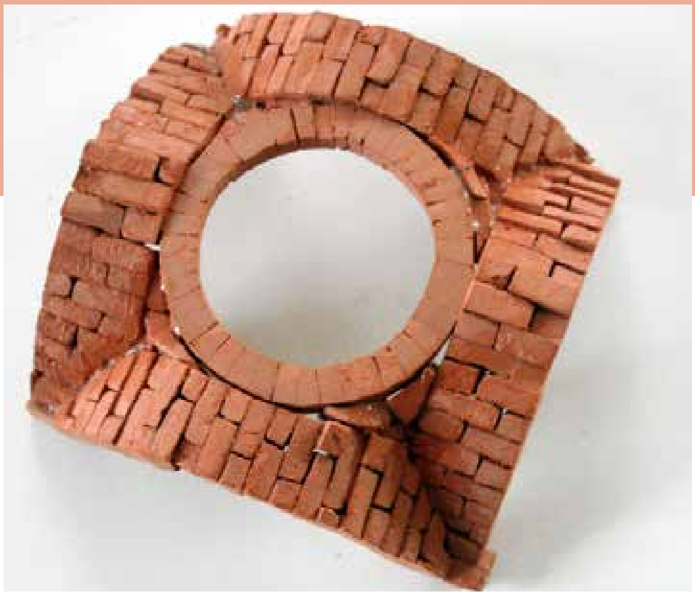
Time has come to build the second cross vault.

Don't worry, I'm not going to write a new chapter for each vault I make because it would be useless as well as boring. However, in this case I studied a slightly different structure whose central opening will serve as a manhole through the ground floor of the Domus and the basement. Here it will be possible to drop the goods from the warehouse directly into the cellar without passing through the stairs, too steep and narrow.

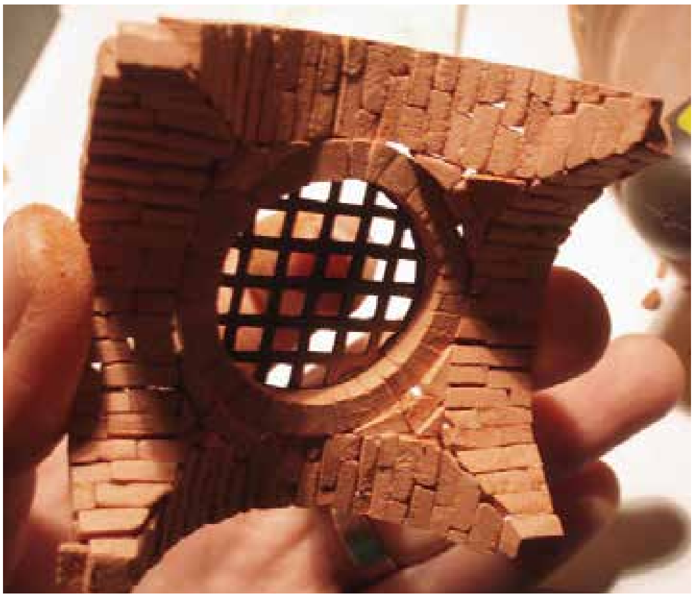
The laying of bricks takes place on the same plaster support used for the first vault, but now it proceeds starting from the side arches to form a sort of frame. In the middle of the frame I've already placed the future grating of the trap door to keep track of the final size of the opening.

This time, in fact, I'll not try my hand at building the grating, but I'll recycle an item purchased some time ago in a jewelry accessories store.

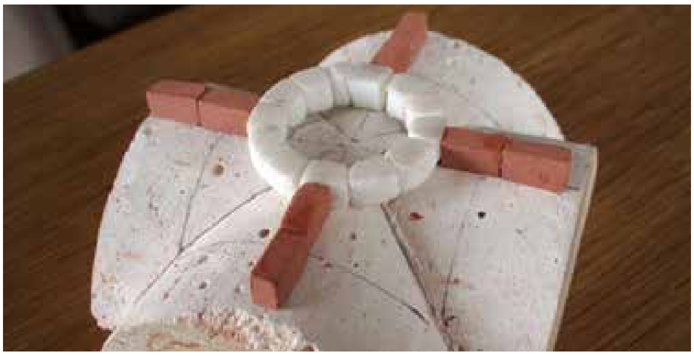




Meanwhile, on another support made by nailing a cardboard disc on a wooden tablet, I lay more bricks to make a complete circle. This is the second element of the vault and it will fit inside the previously made frame.

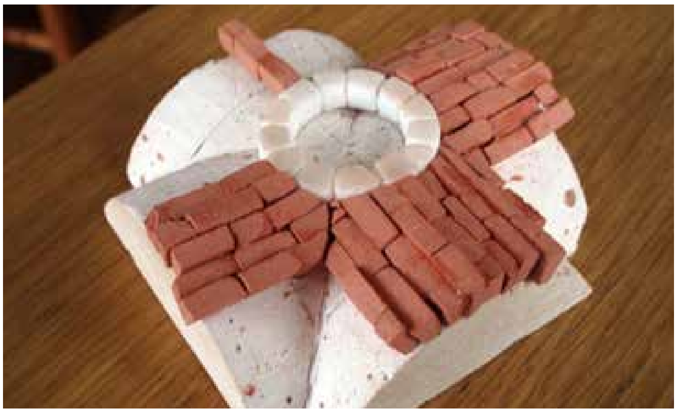


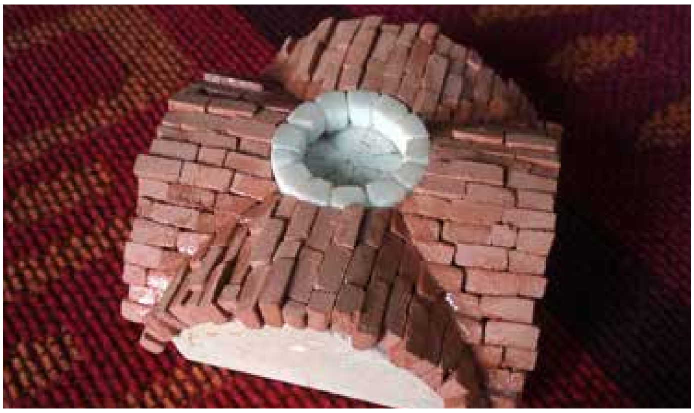
After assembling the pieces, all that I need to do is to fill the empty spaces with properly shaped bricks, something not so easy due to their irregular shape. Obviously the laying must follow the curve of the trap door without leaving any visible gap, although the following stage of the work with cement and varnish will leave the surface perfectly closed.



But before that, I'll work on a second open vault. The starting idea is similar to the previous one, but the materials and the function of the trap door partly change. While the first one has the purpose of connecting the warehouse with the cellar, the new one, with a smaller opening, is located very close to the cistern and is thought to bring water to the upper floors.

It's the third structure of this kind that I build,

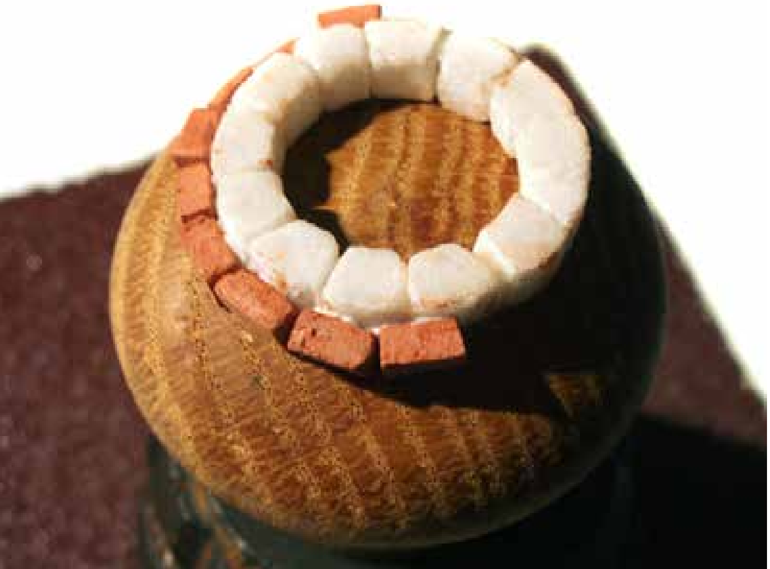


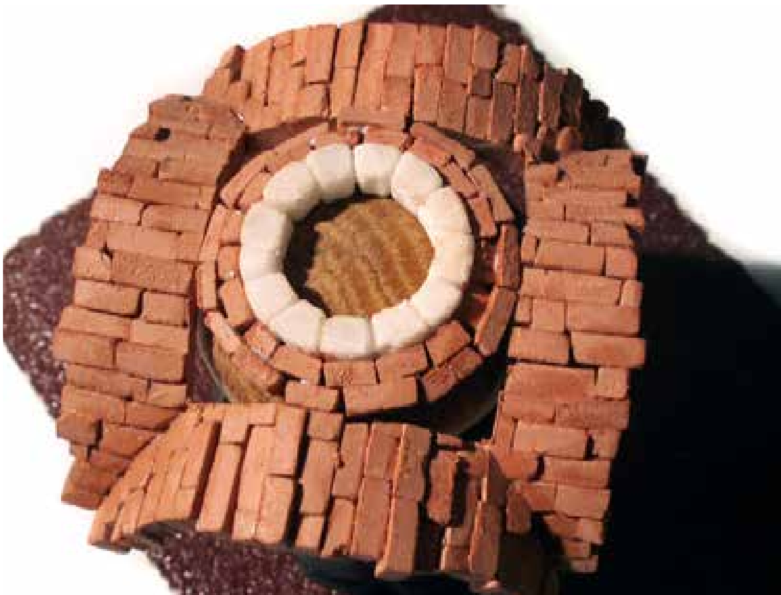


but the construction results a bit troubled. When the vault is almost finished, I realize that it's not structurally good. I mean, I laid the bricks as in a simple cross vault, inserting a small marble ring in the middle of the cross. It seemed a good solution at that time, but now, looking at the finished vault, I feel there's something wrong in it. Only by comparing it with pictures of real structures I can understand where the problem is.

In a cross vault, the strong point that allows the ceiling to support itself is represented by the keystone, a stone or brick sometimes bigger than the others. Without this central resistance, the structure would collapse yielding to the vertical load of the floor. This is probably what would happen to the vault I built.

How can I remedy this problem? Simply by making sure that the marble ring itself plays the key role and is in turn supported by the brick structure. To do this, I take the vault made and cut out the central part. Then, on a slightly curved support (the knob of a drawer) I start to build a new brick ring around the stone circle, until I reach the width of the frame. By chance, its size is almost the same to that of the previous vault, where





MATERIALS:
Das bricks, white marble, vinyl glue,

TOOLS:
tweezers, pincers, sandpaper, files, wooden plank, cardboard, nail, plaster support, wooden knob

SIZE (in mm):
brick trap door diameter: 30
stone trap door diameter: 15
stone trap door thickness: 4

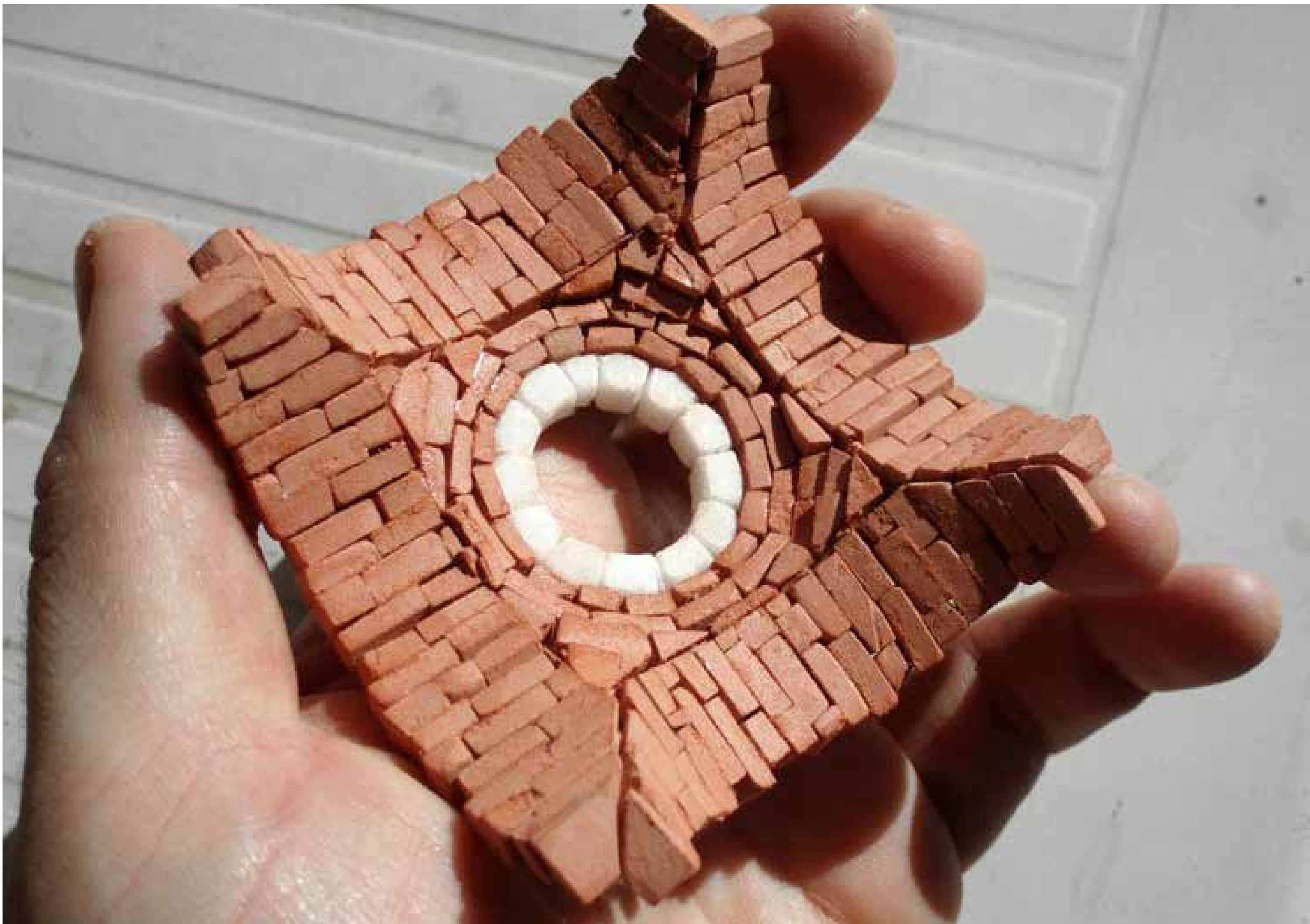
I already put this principle into practice without thinking too much.

The two parts are joined by filling the remaining holes with more bricks, always following the round perimeter of the trap door. The result is the creation of a mixed structure that combines elements of the cross vault with those of a dome.

And now, unless unforeseeable calamities, I hope that the vault will not fall on my head when I go down to the cellar to fill the bucket with water.

And if you're thinking that, given the small size, the vault would not collapse anyway, it's because you ignore a fundamental fact about the Domus project: when the construction is finished, reversing the quantum flow of the miniaturizing ray of Dr. Cyclops, I'll bring the building full size and I'll move there. Then it will be essential that the structure respect the static rules and standards of a normal building!

Or am I missing something?

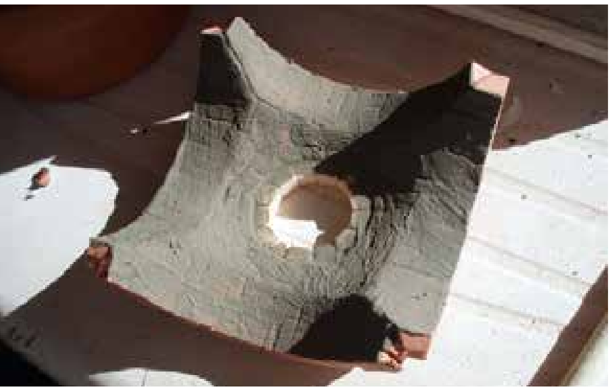


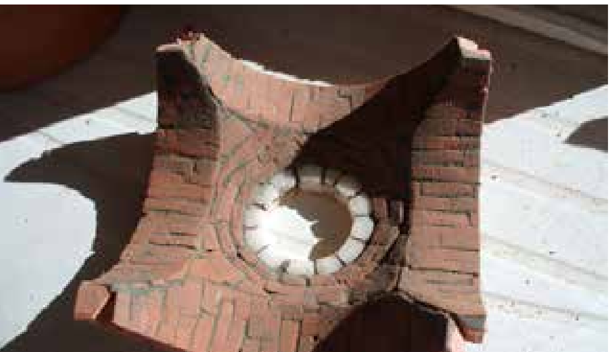
Chapter 17

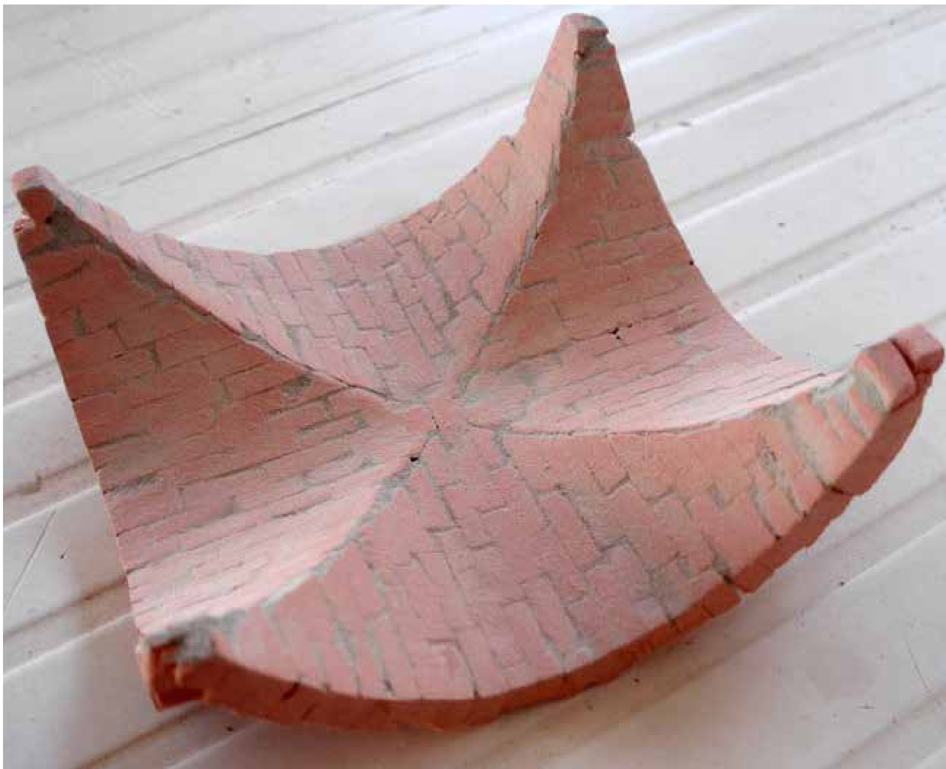
Finishing of the VAULTS and FLOOR

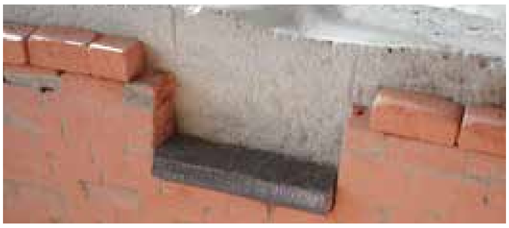
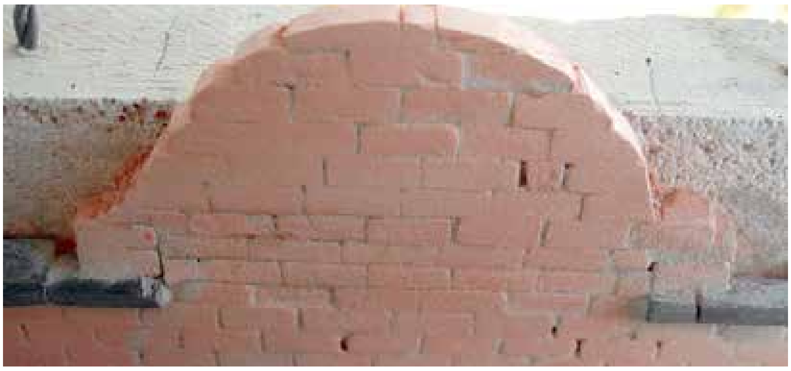
Similarly to what was done for the floor and walls, the construction of the vaults also passes through a finishing and regularization phase.

After shaping the individual pieces to fit perfectly with the other elements, I prepare the usual grout with a little diluted cement and apply it on the entire internal surface of the vaults. Then, before the cement dries, I remove the excess with a wet cloth and let it dry. The last remains go away rubbing on a surface a fine-grained sandpaper, taking care not to damage the newly filled joints.





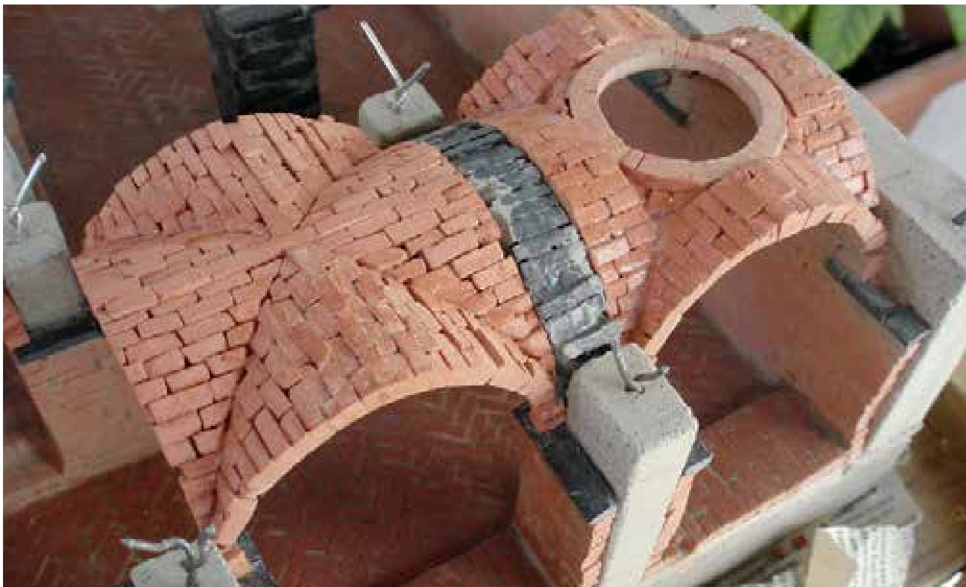


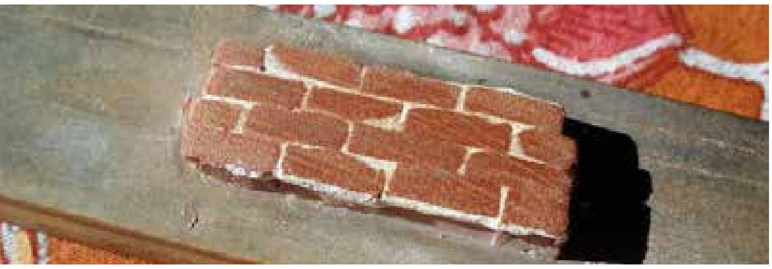



The process is the same for all the vaults made so far, whether or not they have a central opening.

In the meantime, I also put my hand on the perimeter walls by inserting the stone corbels on which arches and vaults will rest. The wall segment between one corbel and the other is raised according to a curved line that will then be adapted to each vault, joining it as much as possible.

Now walls and vaults are ready for assembly and together with the round arches (see chapter 21/27/29) they will form the ceiling of the underground and the base for the ground floor of the Domus.





But let's see how the work goes on the lower level of the Domus, the cellar floor.

Although it has been completed for some time, the last phase of the work (painting) is still missing. At first I'm not clear about the material to use, so I decide to make some preliminary tests.

Before the composition of the *opus spicatum* I had made small portions of the floor on a wooden strip to test different binders. Now these tests will come in handy to study the painting method. I absolutely want to avoid the bright effect that could leave the paint, so it's necessary to act without fail.

Having at home a can of transparent varnish for wood, I test this material first, and the result seems good enough to me (in the picture above the difference between the rough and the painted surface is clearly visible).

Das is a porous material, so the first coat of paint is absorbed by the bricks without these being excessively bright. The color simply takes on a darker tone and, on closer inspection, even more similar to the real bricks.

The other possible solutions that I thought I could test are the use of wax (discarded after a small test of which no trace remains), olive oil and, finally, the paint for exposed bricks (the real ones). After the success of the varnish for wood, however, I decide to cancel further experiments and go directly to the practical work.

With a brush, I spread the first coat of paint on the floor, taking care not to stain the walls still under construction. I quite like how it looks, but the paint is still fresh and I'll have to see it once dry. Meanwhile, due to the cold weather and the late hours, I'm forced to work inside home and the smell of paint is almost unbearable.

The following day the paint is dry, but unfortunately it has lost that uniform look that made it so perfect the night before (perhaps due to electric light). Some areas look lighter and the paint seems to have withdrawn, leaving some spots. In a couple of pictures, taken on an almost dry floor, some of these spots are visible.

By applying strong pressure on the surface (first with the back of a nail, then with the convex side of a spoon) the color seems to take on a more uniform look, but the result does not pass my objective judgment. So I decide to apply a second coat of paint, avoiding the formation of reflections with an old rag that I rub on the fresh varnish. Despite this, the second coat is much brighter than the previous one, and depending on the angle of view the floor reflects the light creating exactly the effect that I intended to avoid.

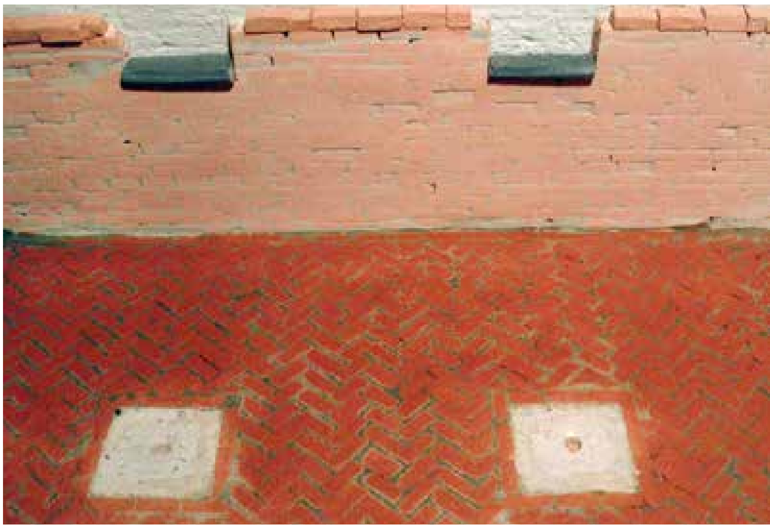
After more useless attempts to dilute the color using the rag, my fingertips and toilet paper (!), I'm almost resigned to keep that annoying shiny effect. Then, for a flash of genius (or perhaps driven by desperation) I try the unthinkable: after having dusted my finger with cement powder, I rub it on the shiny and slightly sticky surface of the floor.

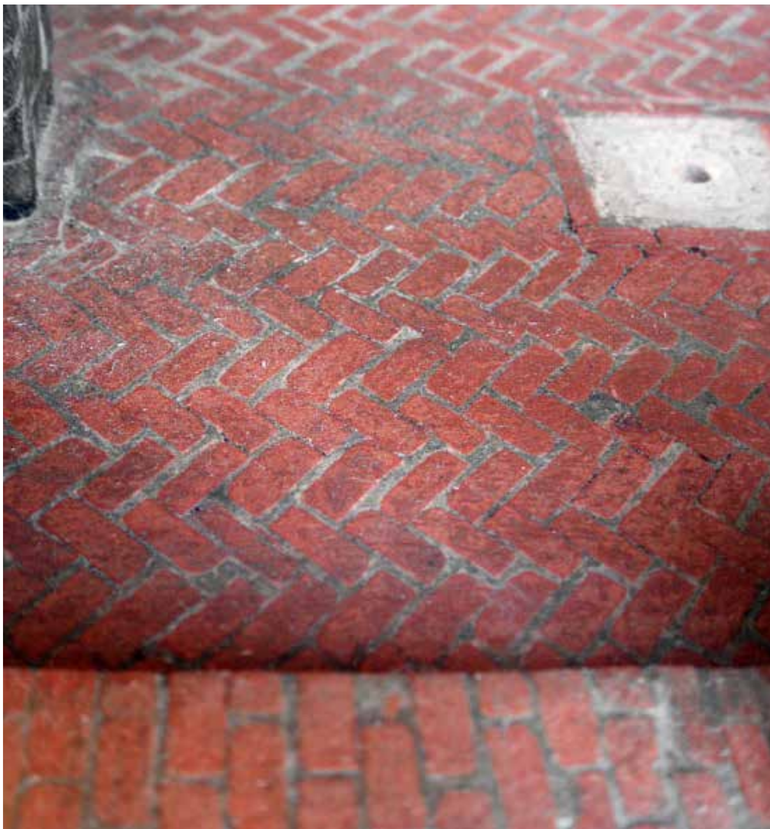
While I work on this, I'm deeply convinced that I've definitively compromised my project. I'll have to do it all over again and at this point I don't know if I'll have the strength for that. I move away from the desk to get some fresh air, and when I come back ... a miracle happened!

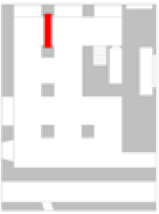
Before my eyes appears the old medieval terracotta floor, aged in a workmanlike manner and weighed down by the dirt of the centuries! Perhaps it's not the effect that I had proposed to obtain from the beginning, also because now I'll have to explain to the client **why I give him an aged floor** instead of a new one... but I'm so happy with the result that I don't worry too much . I'll certainly find a good excuse!

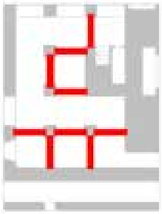
MATERIALS:
transparent varnish for wood, cement

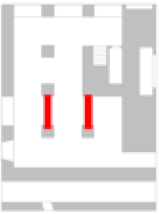
TOOLS:
brush, old rag, sponge, nail, spoon, stress, desperation





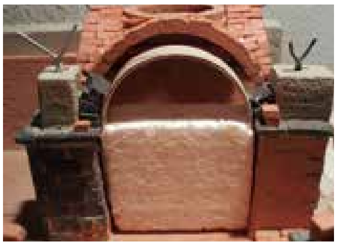


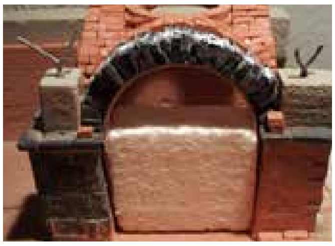


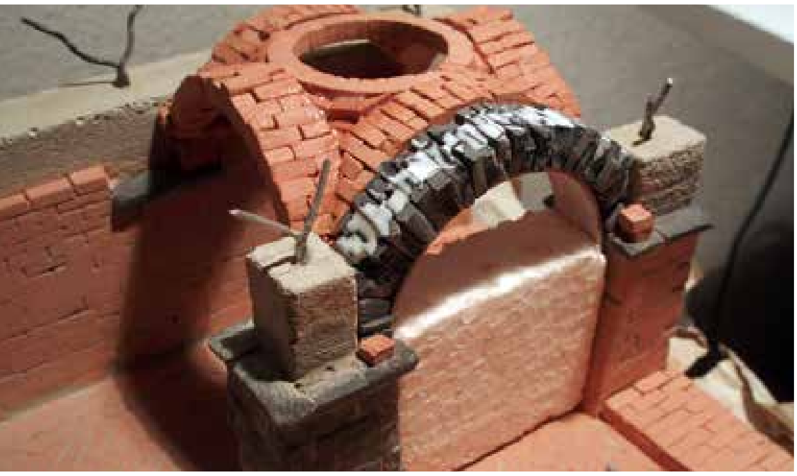


Chapter 18

STONE and BRICK ARCHES







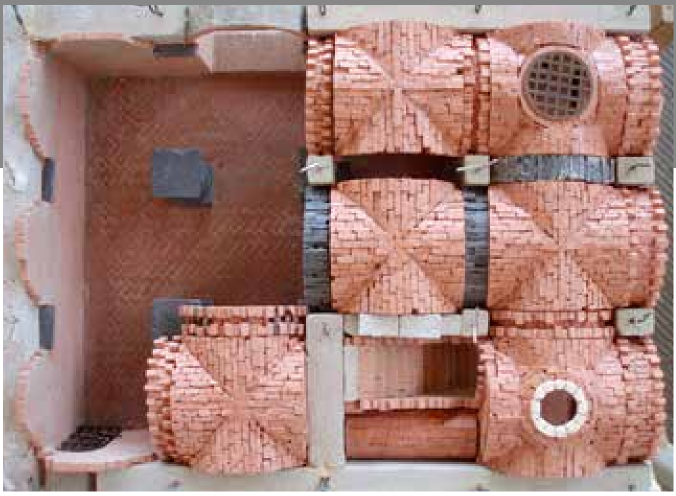
The entire structure of the vaults will be crossed and harnessed by a series of **round arches** whose support points will be the columns, pillars and stone corbels that I've just inserted in the perimeter walls.

The arches will be placed at a slightly lower level than the vaults, making them visible from inside the basements. The first, visible in these shots, is made with slate. Others will be built in brick or mixed technique.

As I said, I like to vary. The end result may be uneven due to the different solutions adopted within the same structure, but I want to avoid getting bored at all costs. And in any case it seems that the "client" doesn't mind this variety.

But let's go back to our arch. The laying takes place on a temporary structure of polystyrene and cardboard, arranging the pieces flush with the already finished (but still removable) vault. The stones are assembled with glue and the arch will then be finished with cement to fill in the empty spaces. The excess glue on the extrados is intended to give more resistance to the arch and will be covered with the laying of the upper floor.

My only regret: having glued the arch directly to the pillars. By now I leave it so to not damage it, but I'll try to keep the next arches loose to assemble them in the end with the vaults.



The cross vaults that close the basement are 11 in total, arranged in a 3x4 grid (the space of the twelfth is occupied by the stairwell). The empty strips between a vault and the other are filled with round arches that cross the room joining columns, pillars and load-bearing walls to form a sort of web.

All arches are similar in size but not in materials. Of the 17 arches that make up the grid, 4 are made with slate, 11 with bricks (3 of which are thicker and placed along the perimeter) and 2 in mixed technique.

The arches are made of bricks arranged edgewise, alternating heads and ribs. Also in this case the shape is slightly trapezoidal to adapt to the curvature of the intradox. In fact, the construction takes a long time and is interrupted several times for the construction of other elements, such as railings and wall torches.

Here you can see various stages of the construction, for which I used the same polystyrene and cardboard support already used for the stone arch.

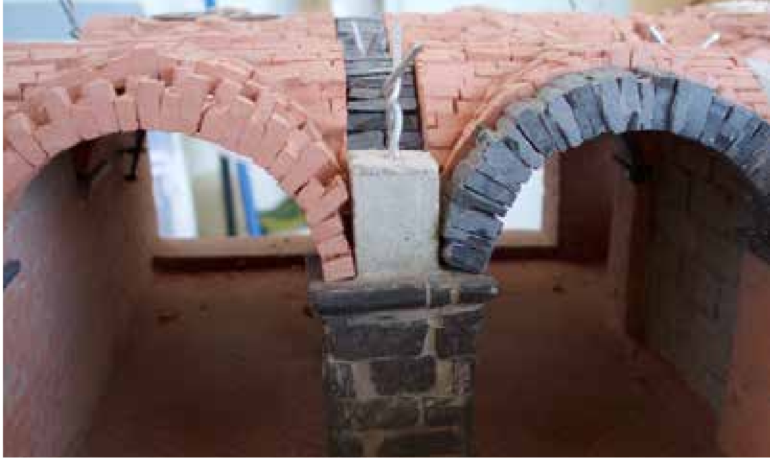
In addition to the arches composed uniformly of stone ashlars or bricks, within the Genoese wall structures we can find examples of arches made in a mixed technique that alternate the use of different materials. In some cases they perform the usual structural function but also respond to a decorative need.

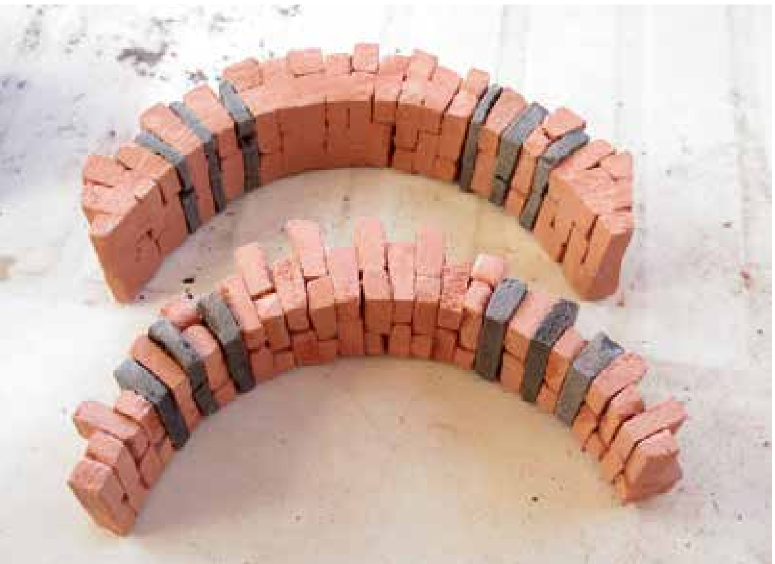
I don't think that this kind of arch was very common, in general stone structures that were not on the facade or the noble floor were not formed by square blocks but by irregularly shaped stones embedded between them. This technique became more common in more recent times, when the facades began to be plastered and painted. It was therefore also used for the perimeter walls, often accompanied by the use of brick around the openings and where greater precision was required.

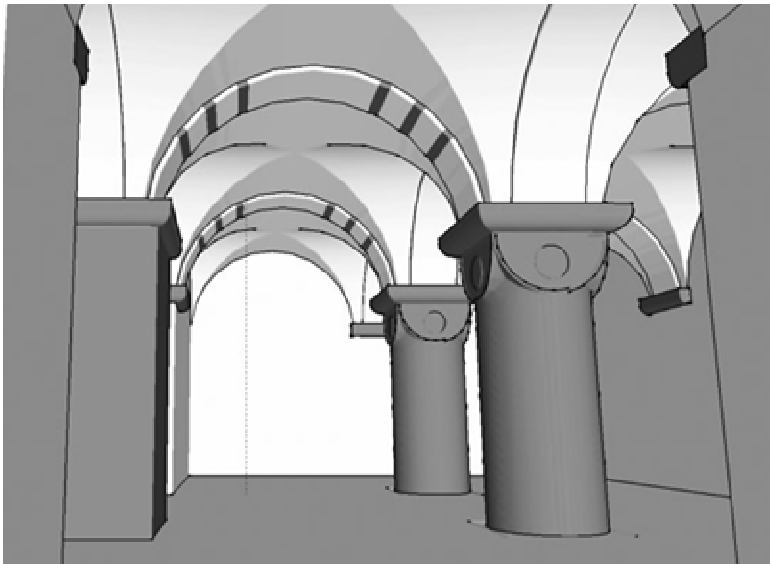
The decorative aspect, however, is what leads me to choose this further model for the construction of two arches. To be precise, those in line with the side access of the basement. This wider area will be used as a cellar and pantry.

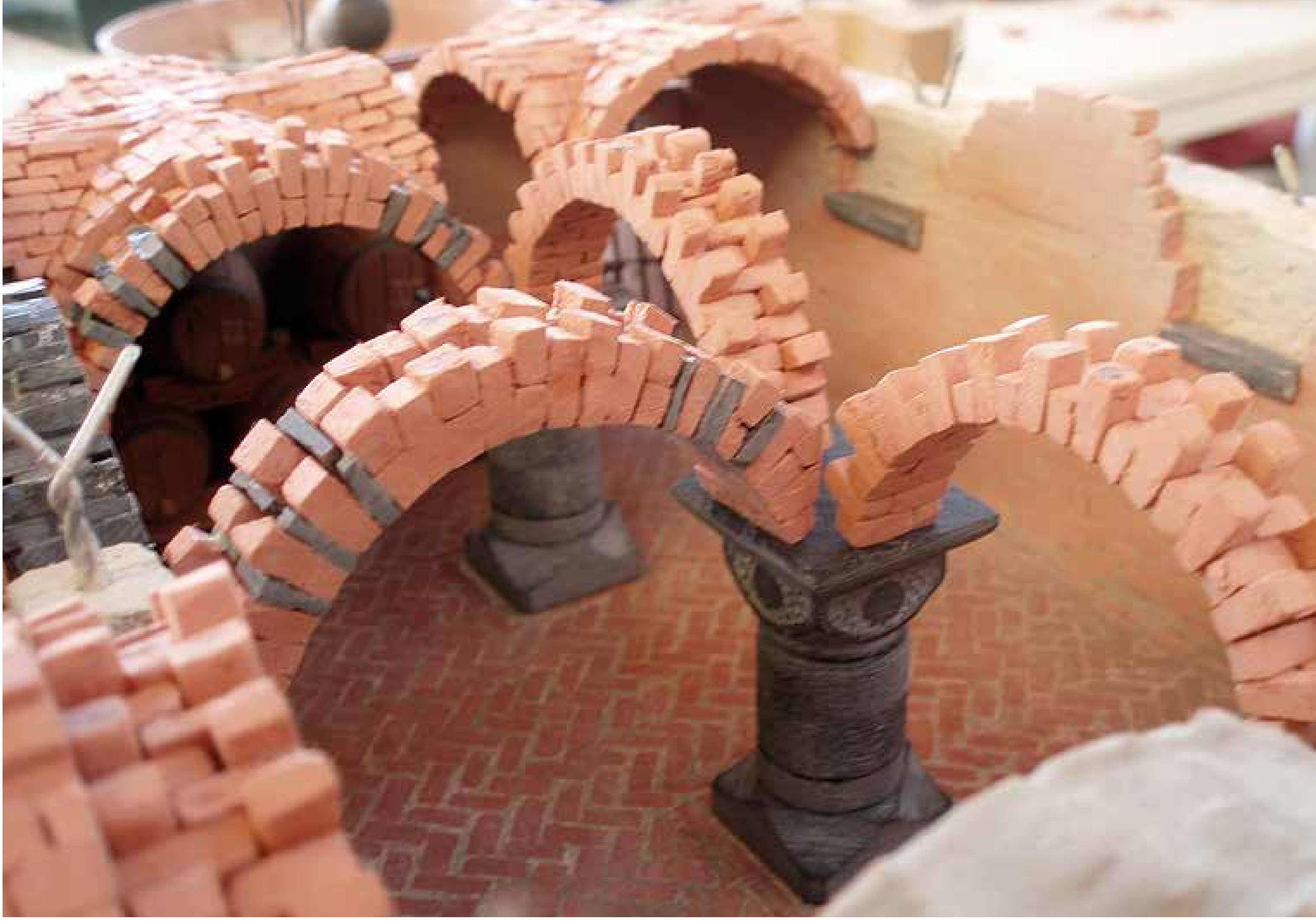
The slate used is the same as the stone arches and replaces what in reality would be blocks of **marly limestone**, a rock very common in the Genoese area for its availability and excellent resistance. The bricks, needless to say, are the result of one of the massive production shown in chapter 2.

This material is by far the most present and will be the king for a while longer, to give the podium to slate in the upper floor and completely disappear when I'll try my hand at making real terracotta bricks...









MATERIALS:

Das bricks, slate, vinyl glue

TOOLS:

tweezers, pincers, sandpaper, files, cardboard, polystirene,

SIZE (in mm):

width: 56;
height: 25 (int.); 30 (ext.)
thickness: 12 (perimetral arches: 20)

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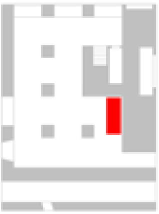
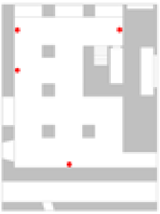




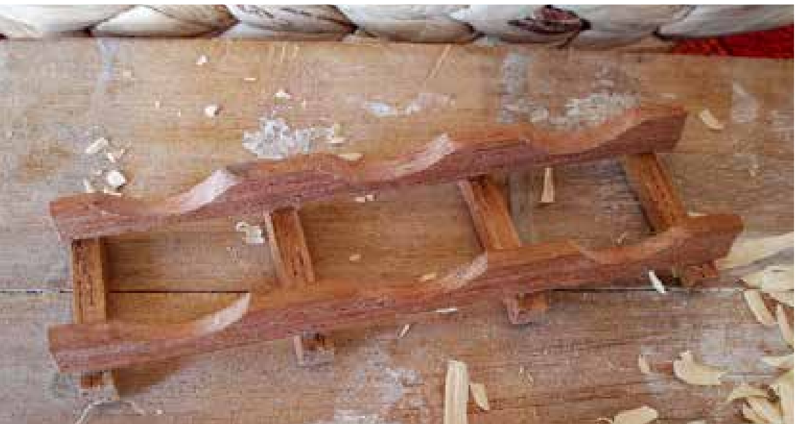
Chapter 19

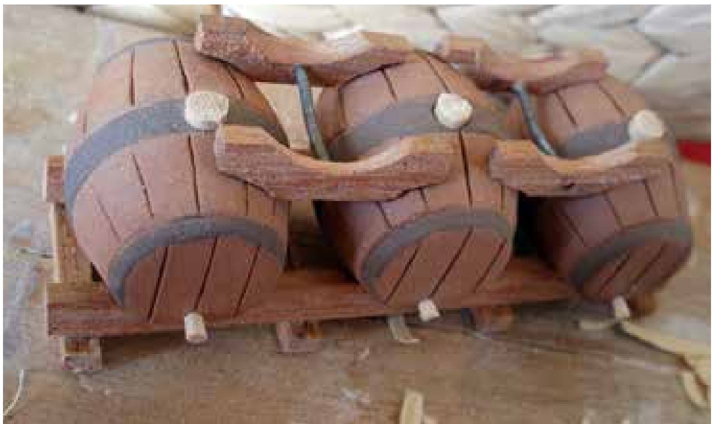
WINE BARRELS and WALL TORCHES

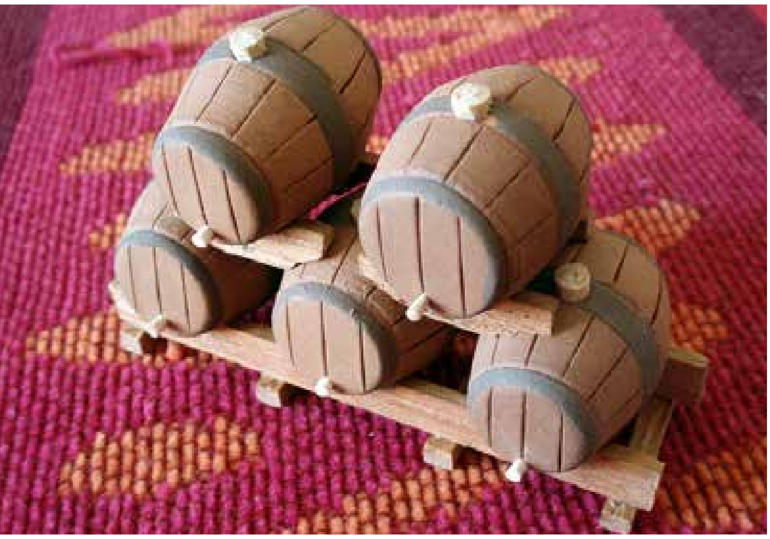
Together with the construction of the basement, I start taking care of the objects that will be used to furnish it, and in a good cellar a few barrels of wine certainly cannot be missing. I'll not need many of them, just the indispensable to satisfy the thirst of my guests.

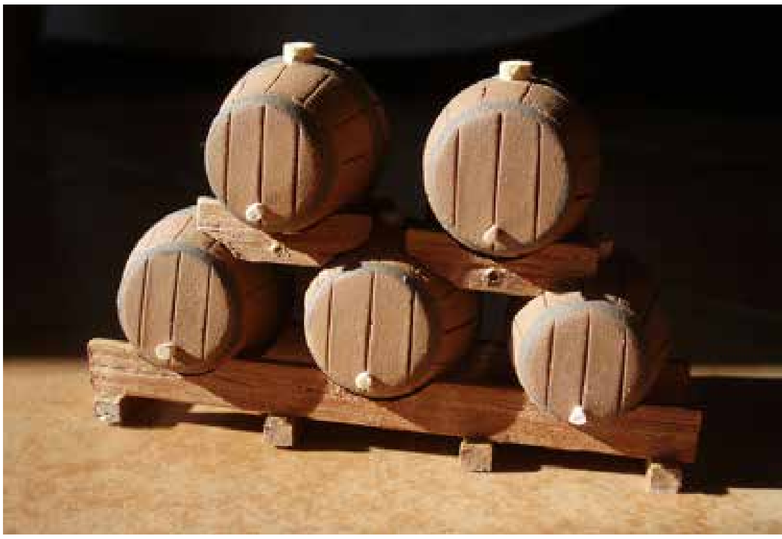
Among my recent purchases at the Christmas market there are 5 small handmade clay barrels, one of the few accessories for nativity scenes that fit my project in size. At first, I thought of building them myself, but having found them ready I prefer to spend more time building architectural elements. In any case, the barrels will also have to be "customized" to adapt them to the new environment.

First I deal with the caps, that I make by cutting small sections of a toothpick and inserting them into their holes, already present. Then I proceed to build some wooden supports (as in the pictures) that will serve to stack the barrels along a wall of the cellar.









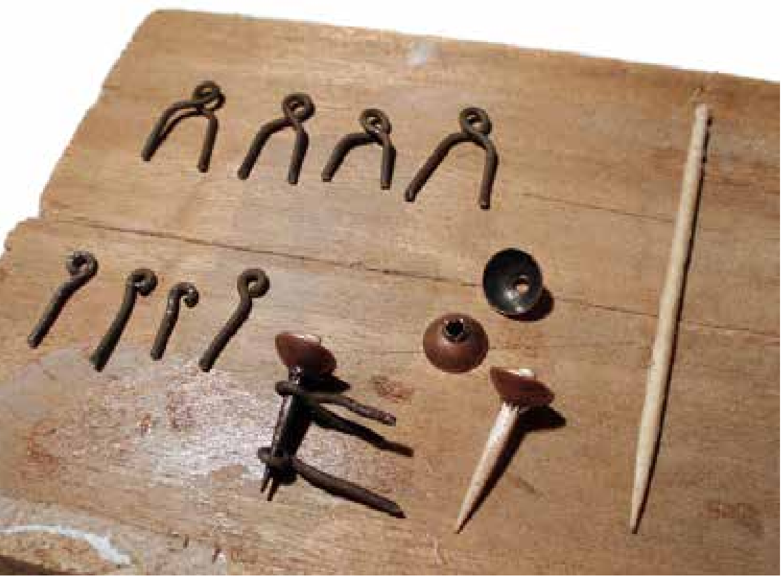
Once the base for the first row has been built, it's the turn of the second one. In this case the pieces are joined by a metal bar, made with segments of simple wire.

Once this is done, I glue the barrels and put them aside waiting to fill them with good red Corniglia wine ...

SIZES (in mm)
barrels: Ø 17/24 x 28

MATERIALS:
accessories for nativity scenes, wood, iron wire, toothpick, glue

TOOLS:
tweezers, cutter, Dremel tool with sanding drum and mini-drill, pincers



But how can I get a cup of wine if I can't see it? That, of course, is why the cellar will be equipped with a full set of **wall torches**.

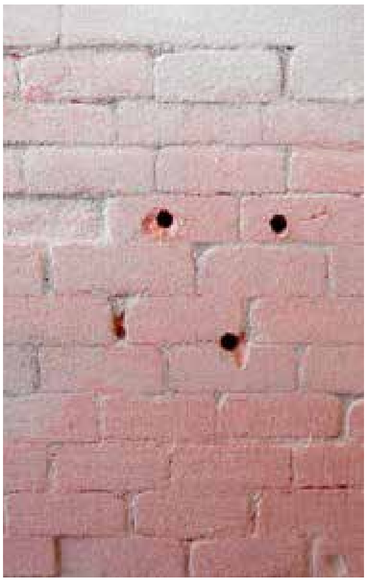
Actually there's not much to tell, as the pictures illustrate their simple construction process quite well.

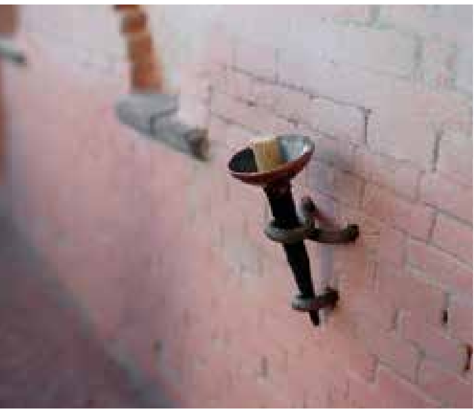
This time, together with iron wire I'll use some accessories for costume jewelery, toothpicks and a black marker.

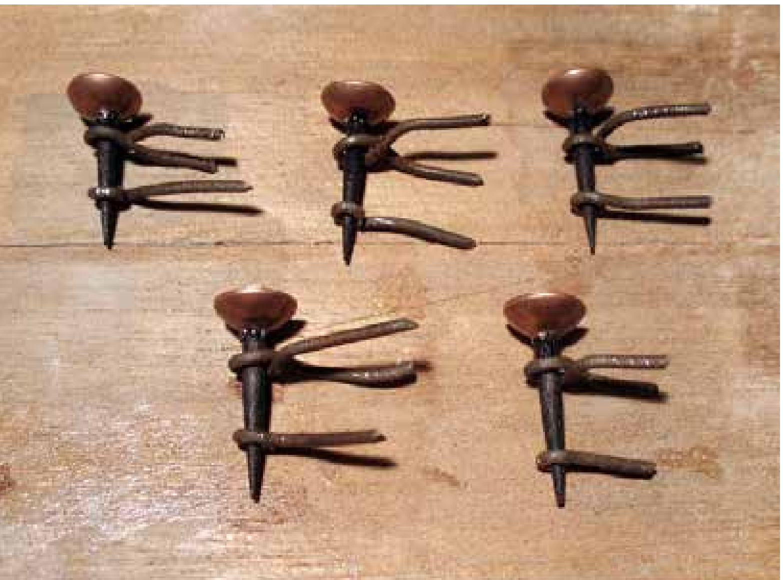
Once the bar has been removed, the metal elements (presumably pieces for making earrings) appear as small copper-colored cups. With the help of a round nail and a hammer blow, I enlarge the central hole to a diameter of about two millimeters, enough to insert the previously cut toothpick. Then I paint the lower part black, obtaining something that vaguely resembles a torch. There is better, but for now it may be fine.

In the meantime, with pliers and pincers I work the wire, shaping the hooks that will serve as a support. Once made the appropriate measurements, I make the first holes on the wall with the Dremel, using the flexible shaft to be able to move the drill inside the cellar.

Now that all torches are installed I could pour a drop of oil into each and test the effect. Or who knows, some other ideas will come to mind...



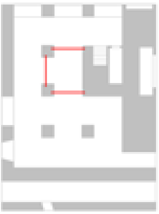




SIZES (in mm)
torch: 8 x 20;
height from the floor: 30

MATERIALS:
earrings, toothpicks, iron wire, glue

TOOLS:
tweezers, nail, hammer, black marker, Dremel tool with flexible shaft and mini-drill



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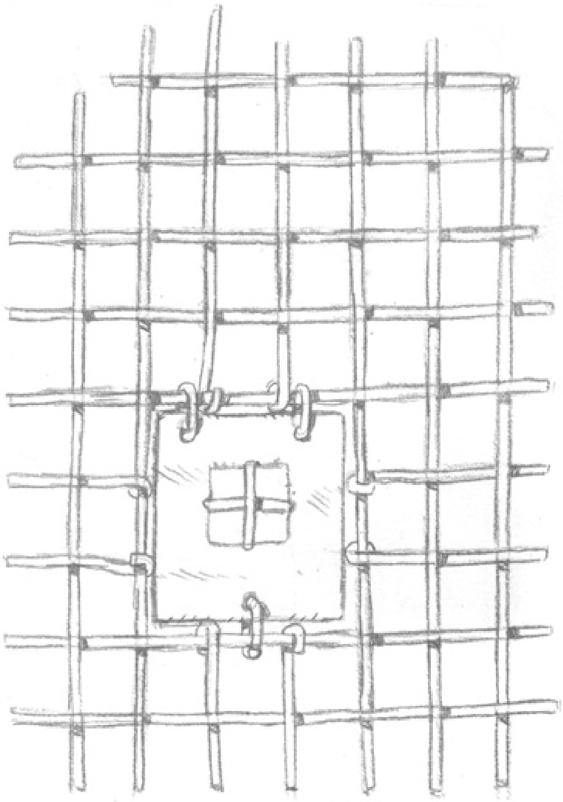
Chapter 20

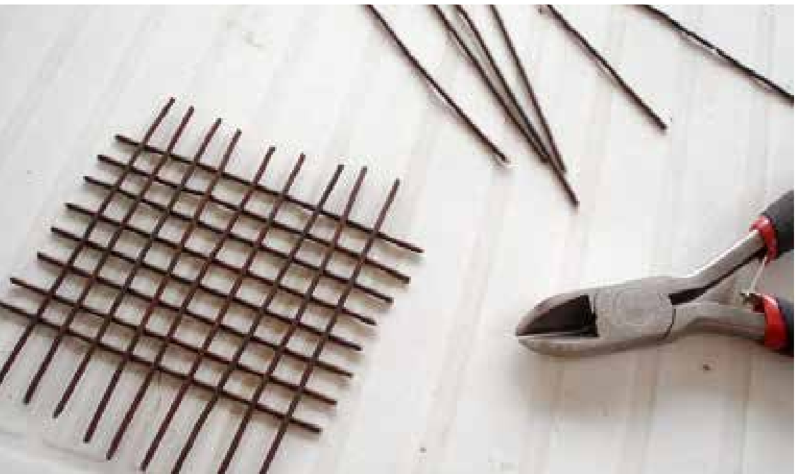
IRON RAILINGS and PRISON DOOR

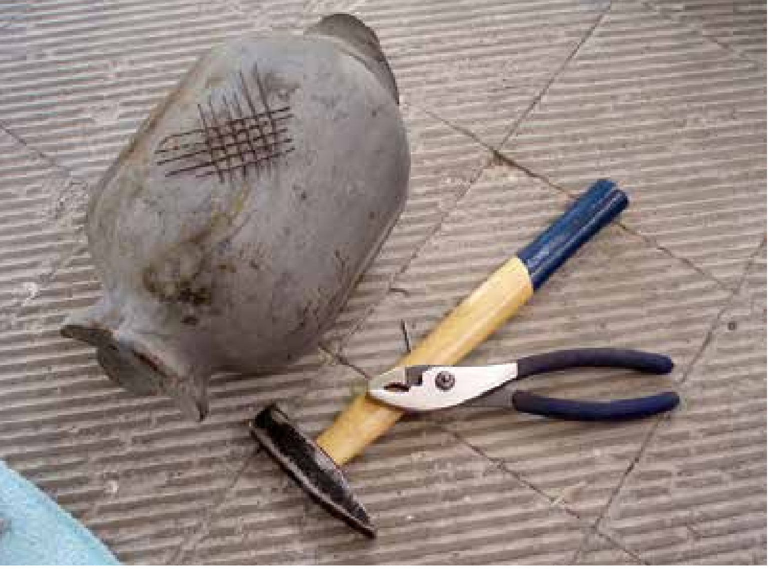


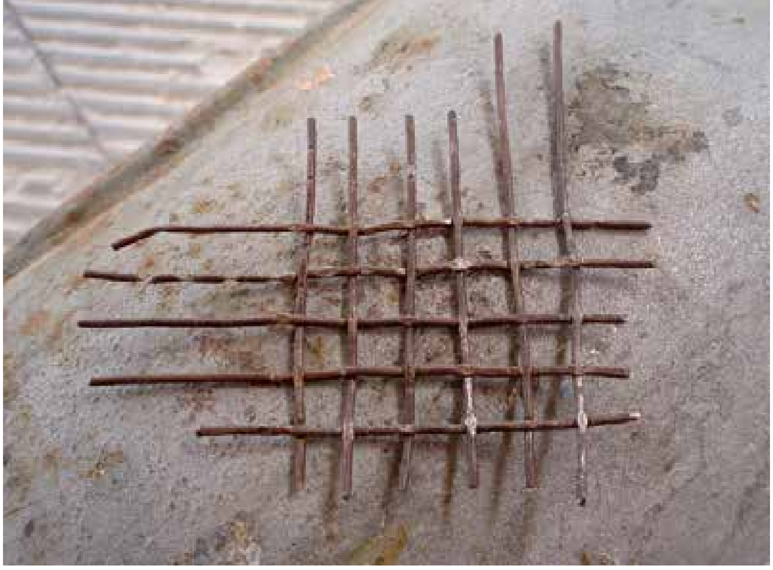
A security cell where to lock up any captured enemy or some rebellious family member can't be missing inside the Domus. I've chosen for that a square space under one of the cross vaults that I'll close with railings and a small door. The iron bars will be fixed on each side to the floor, ceiling and pillars.

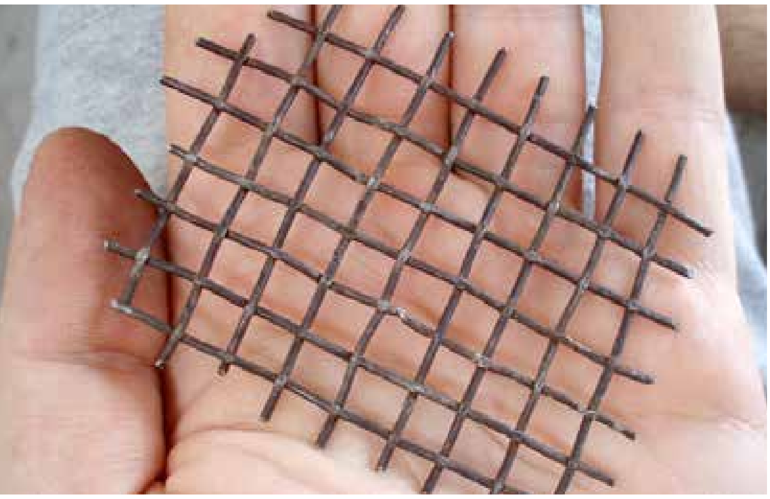
I start cutting the bars using an old but not rusty wire. At first I think to place vertical bars only, reinforcing them with one or two horizontal wooden slats. The result might have seemed convincing at first glance, but it didn't look medieval at all. A quick search on the internet confirmed this sensation, making me reconsider my plans during construction (as usual).

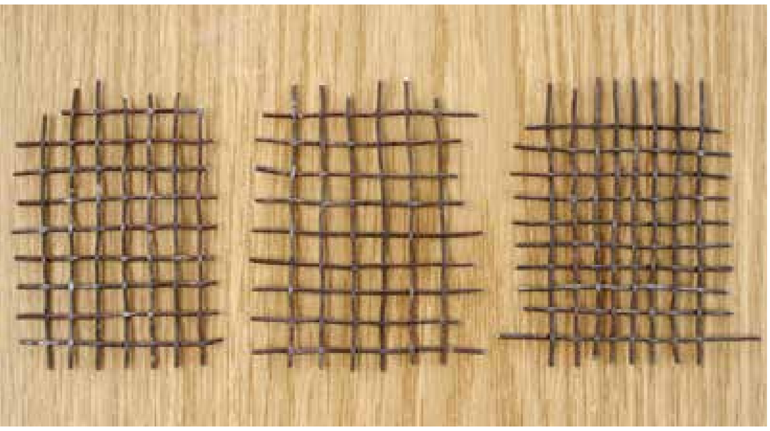
I decide to change the gray wire for the old rusty wire already used in the construction of the tunnel gate (see chapter 16).











After making sure that the bars can be deformed with a light beating and crossed to form a lattice, I realize that I'd need a hard surface where to hit the hammer, possibly without destroying the floor tiles or torturing neighbors' ears.

I try on a granite stone, but after the first few blows it breaks in half. Furthermore, the stone is not perfectly smooth and partially absorbs the blow, damaging the external patina of the iron. If you're wondering why such a clumsy attempt, try to understand: I don't have a workshop with all the tools I'd need, everything you see in these pictures come to life in a very normal and small apartment on the fourth floor of a residential building. But let's go on...

When I already despair to find the right base, a *grenade* comes to my aid! Well, not an explosive one, but the *pomegranate* symbol of Granada (Spain), reproduced almost everywhere in the urban furniture of this town. Some time ago I brought home the broken head of a cast iron curbstone. It remained parked on my terrace since then and now I've decided that it will become my official **anvil**!

Even so, the assembly of the first bars is a bit difficult. Working with bare hands, without clamps or other tricks, the pieces tend to move and bend in all directions. Once the first three vertical and horizontal bars are intertwined, the structure is self-supporting making any glue unnecessary. The hammer blows on the joints flatten the weave and giving it a more similar look to the real railings.
Of course, working hot would sort a better effect, but I don't have a foundry either, so I'll settle for it!

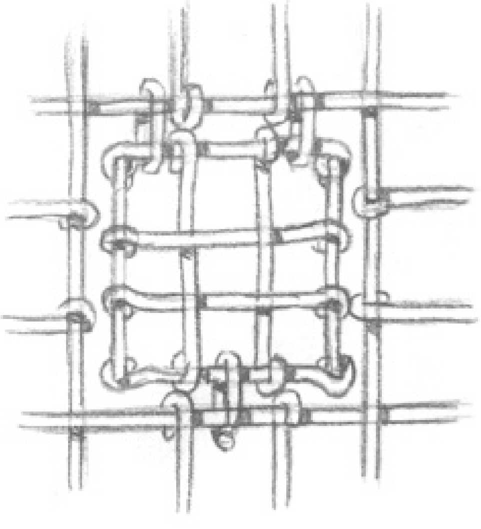
When the first railing is over, it's the turn of the second and third one. The size should be the same for all three, with the difference that in one of

them the access door will be opened. Actually, the spacing of the bars is slightly different from one to the other, but since they'll be mounted on different sides of the "cage" without connecting directly to each other, it may be fine.

After making the grates that will close the three open sides of the underground cell, it's time to think about the door that will allow prisoners access. At first I think to make a real door, similar to the iron gate that closes the tunnel. However, given the use of the cage and after observing some pictures of similar structures, I opt for a much smaller opening, which forces those who are introduced into the cell to lower their head and enter by raising one foot at a time. After all, it's a prison, not a tea room!

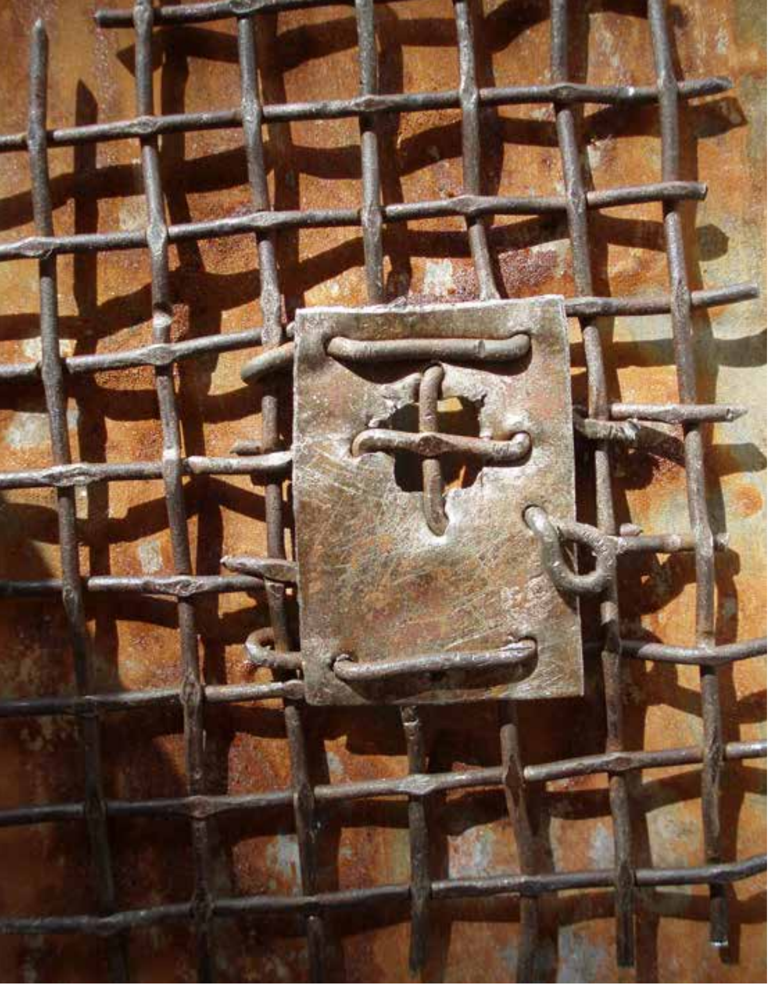
Around here you can see a couple of studies through which I tried to imagine the look of the door once finished. The first one is made of metal foil, while the other uses the same wire of the railings. The model chosen is the first one, but hinged on the left instead of at the top.

The first problem I face is the **cutting of the railings**. The short bars can't self-sustain without moving, so I need to twist the edge of the wire. After some unlucky attempts and the replacing of two bars (not documented by any picture), I finally reach my goal.



Second problem: **cutting the sheet** and its processing.

A few months ago I picked up a short pipe covered with a thin metallic sheet. As usual, I've only done what I always do: collecting trash. I find useful 2 or 3 wastes every 10 I bring home, but without this insane passion my project would hardly go on.



After skinning the pipe and cleaning the sheet from varnish, I scratch it with sandpaper and put it under water to see what happens (still I don't know how to use it). The composition of the sheet must be partially ferrous, but the oxidation process is quite slow (two weeks under water). Anyway, the result is good and even better than simple iron, where rust usually takes a brighter color.

To cut the sheet, I previously mark the edge of the door with a pencil. Then, beating on my new anvil with hammer and chisel (a single sharp blow) I carve the four sides till I break the piece. The holes to insert the hinges are made the same way but using a nail. Of course I make all this very carefully to save my fingers from chisel and wearing glasses to protect my eyes.

Once again, there are no pictures of this operation, but the final result is visible on these pages.

Last touch: a thin rusty coat to hide the scratches and a quick burn with a lighter.

So... I admit that this piece could be more accurate and perhaps it doesn't look so realistic, but it's the very first time that I work with iron sheet and it could be (much) worse. What's more, it's fully functional, and now it's ready to be mounted on the jail!

SIZE (in mm)
railings:
52 x 76 (1); 55 x 76 (2)
bars: Ø 1;
space between bars: 4/5
door: 18 x 24 x <1

MATERIALS:
iron wire, pipe, metal sheet

TOOLS:
tweezers, pincers, clamps, hammer, "anvil",
chisel, nail

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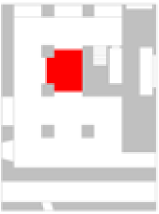


Chapter 21

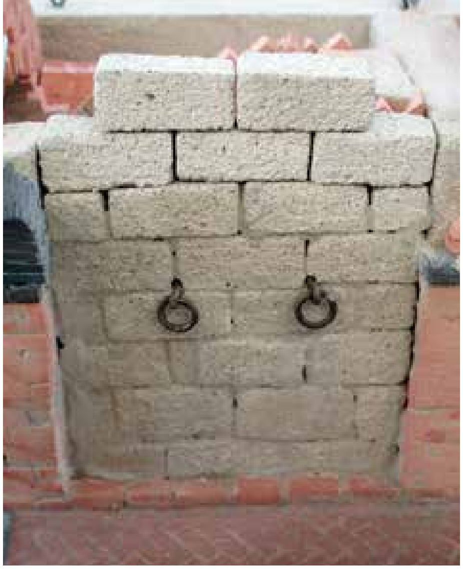
The JAIL

Now it's time to install the iron railings built in the previous post (chapter 25-26).

With the Dremel tool equipped with flexible shaft, I drill the holes in the floor to insert the bars of the first grate, previously marked with a pencil. This allows me to mount the piece (temporarily bending the horizontal bars) and then take the measurements for the holes that I'll have to make in the wall.

This time I can't use the Dremel, because even the flexible shaft cannot pass through the narrow space between the walls of the basement. So I remove the point from the drill and push it against the wall with my fingertip, while with the other hand I rotate it on itself in one direction and the other. It's a very slow method, but fortunately Das is a soft material even when dry.

At this point I insert the grate again, now also fitting it into the wall, and cutting the bars at the top following the curve of the arch. Some



horizontal bars are a little short and don't touch the stone pillar. Mmmh... I reserve the right to replace them in the future. For the moment I go on with the assembly of the other two grates, but not before inserting a couple of iron rings in the back wall. They'll be useful to tie prisoners to chains and we'll see them better later, together with the history of this wall.

Now I place the central grate by fitting it without drilling the pillars (which would be almost impossible). Here too I cut the excess bars following the stone arch. For the third and last grate, however, I work the same way of the first, and when it's done, the main structure of the prison cell is complete.

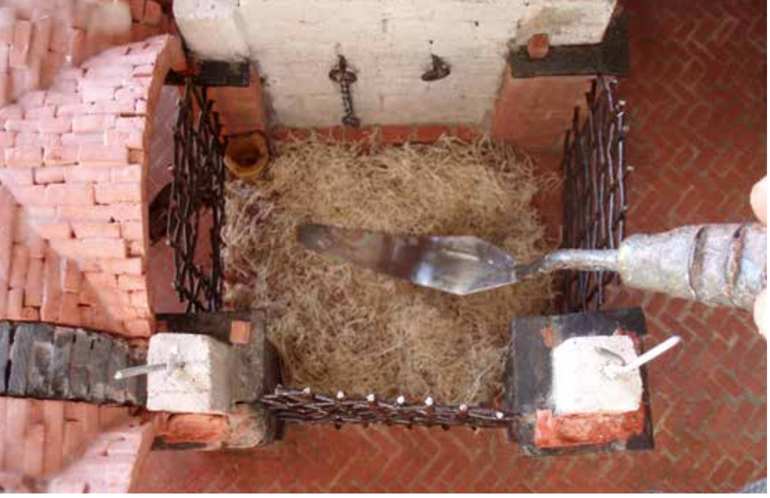
Only a few details and the last finishes are missing, but... I already seem to see a figure in the shadows, curled up against the wall. Long hair, face carved... a heavy chain on the feet and on the body

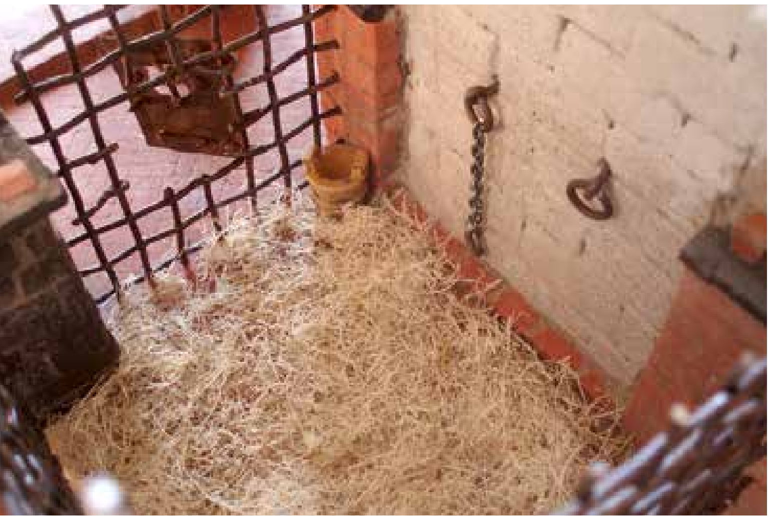
the recent signs of torture. But maybe it's just my imagination playing a bad joke on me...

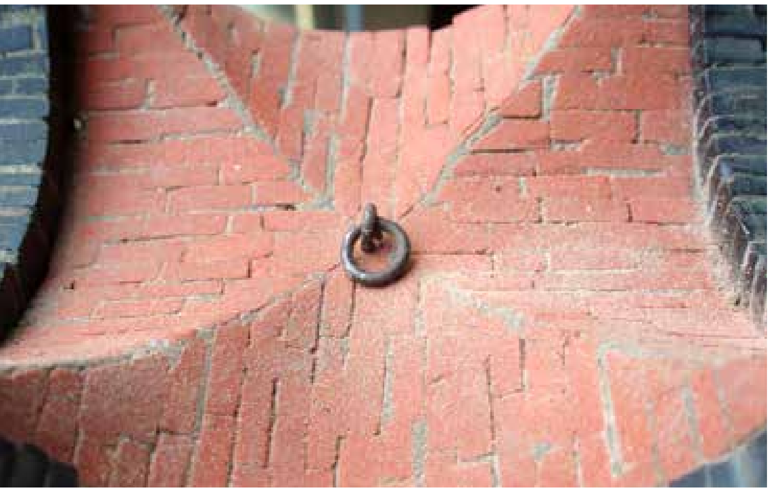
Now I'd like to make a straw mattress to use it as a bed for the prisoners and collect any crap that could ruin my beautiful terracotta floor. To do this, I'll use a hemp skein abandoned by the workers of a road construction site and promptly picked up while passing there.

After cleaning it well (it has been in bad weather for a long time and it's full of dust), I separate the larger threads that would be out of scale and reduce it to small strands with scissors. Just a few snips and it already looks like a pile of straw.

Now I place it on a temporary surface (in this case a cardboard sheet) and I sprinkle it with spray glue. I let it dry for a few minutes, then I remove the hemp from the cardboard and press it lightly







between my fingers, thinning it evenly. Now my straw bed is ready.

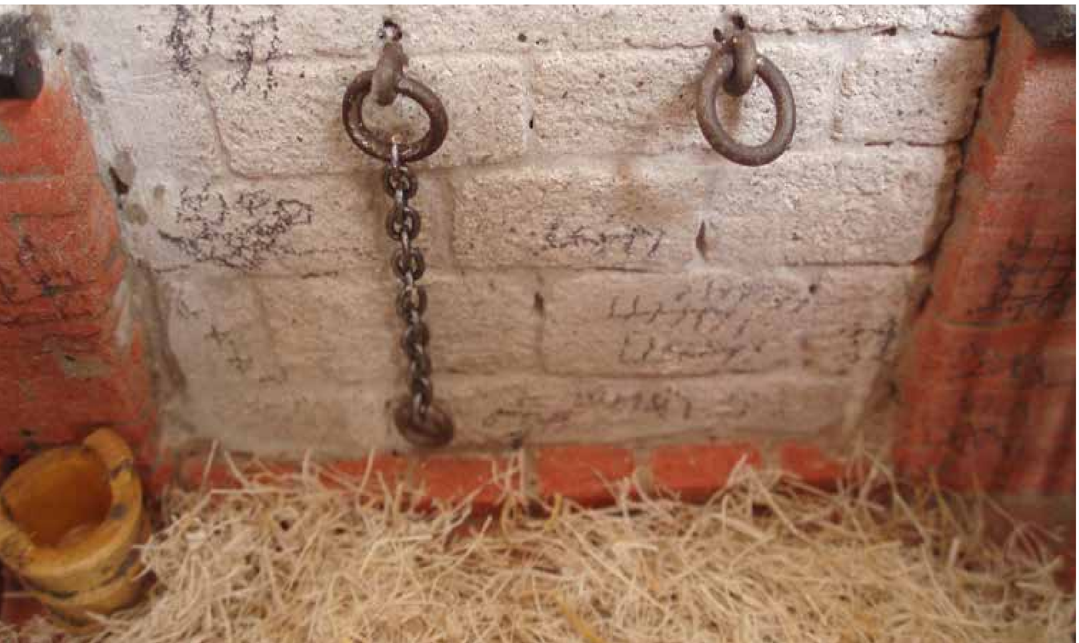
Before the laying, I spray a little more glue on the floor, then I apply the straw mattress by pressing it with the putty knife and adding a few more strands of straw to cover the whole surface. In a corner I place a small wooden bucket purchased together with other model shipbuilding accessories, and now my cell has a brand new toilet!

In the center of the vault I insert an iron ring similar to those already placed in the wall, and between these I pass a chain that will remain dangling at medium height. It may be useful for less collaborative prisoners. In addition, a short chain ending in two large rings glued to the threshold will serve to block their ankles.

The inside of the prison is now much more welcoming, isn't it? Only the vaults are missing, but I'll still have to make some small changes to adapt them perfectly to the structure. In the meantime, I can temporarily place them to test the final effect.

Ah, one last detail: as proof that this cage is not only there for the sake of beauty it will be a good idea to decorate the walls with some graffiti, scrawled by prisoners during their long detention. One of them was probably a sailor and to feel more comfortable he drawn by heart a couple of galleys.

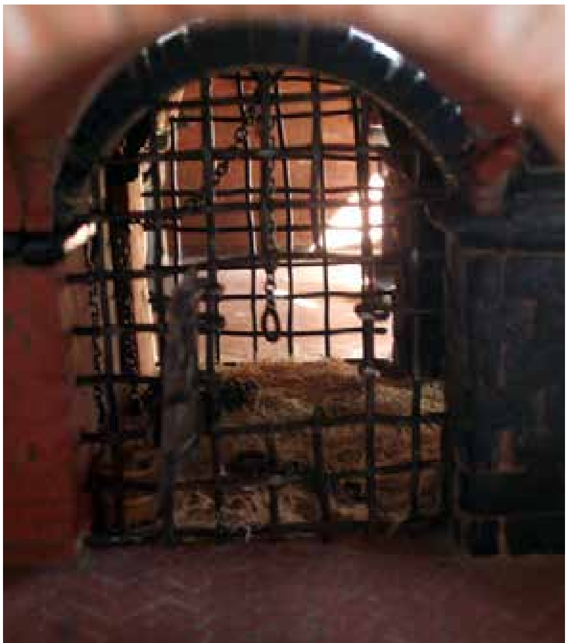
And with this I really think that nothing's missing. Aside from new guests, of course...

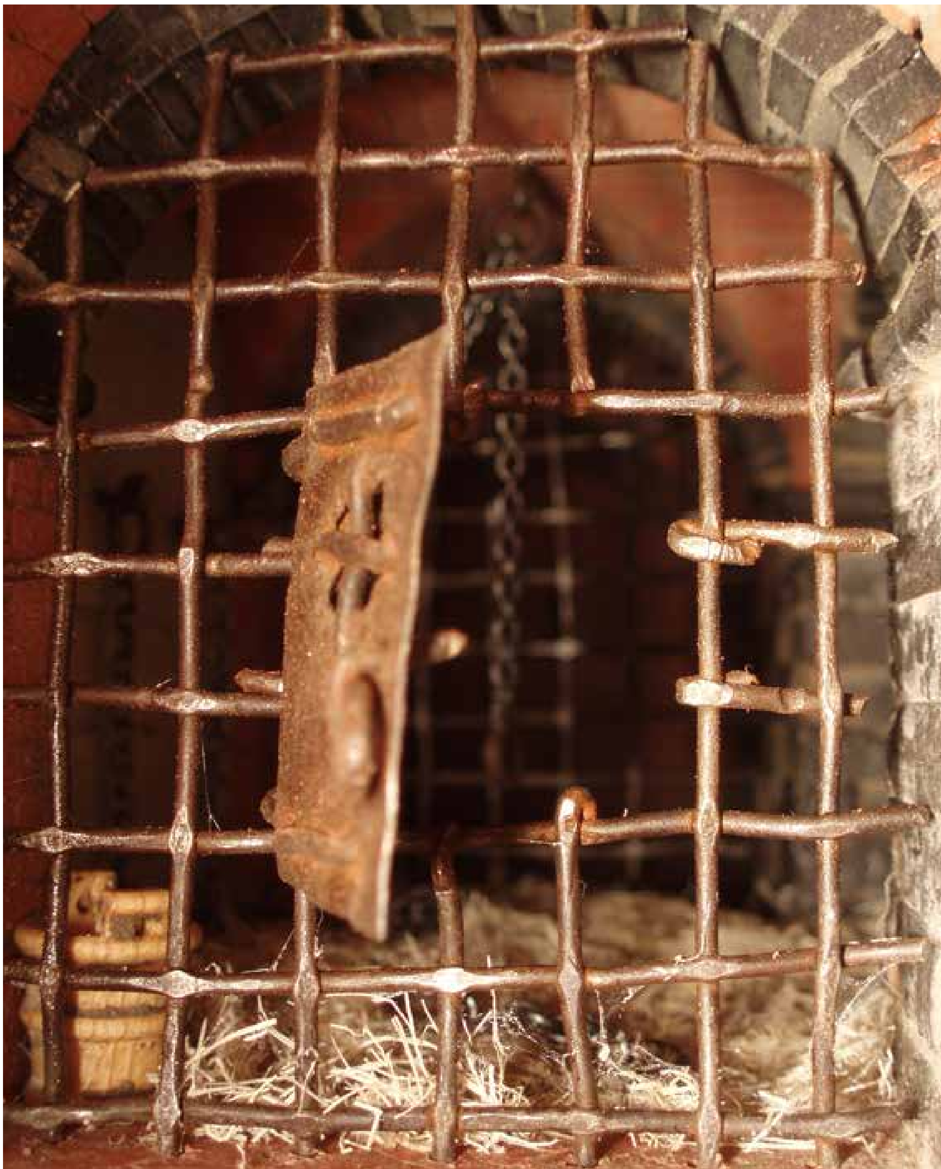


SIZE (in mm)
total area: 80 x 80 (except the pillars' corners)

MATERIALS:
hemp skein, glue, spray glue, iron wire, chain, ship modeling bucket

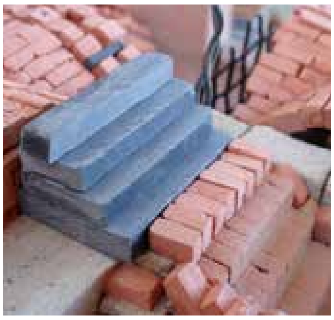
TOOLS:
tweezers, pincers, pencil, putty knife, Dremel tool with extensible shaft and drill

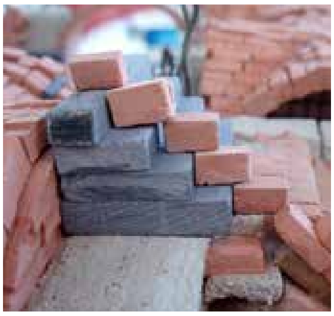


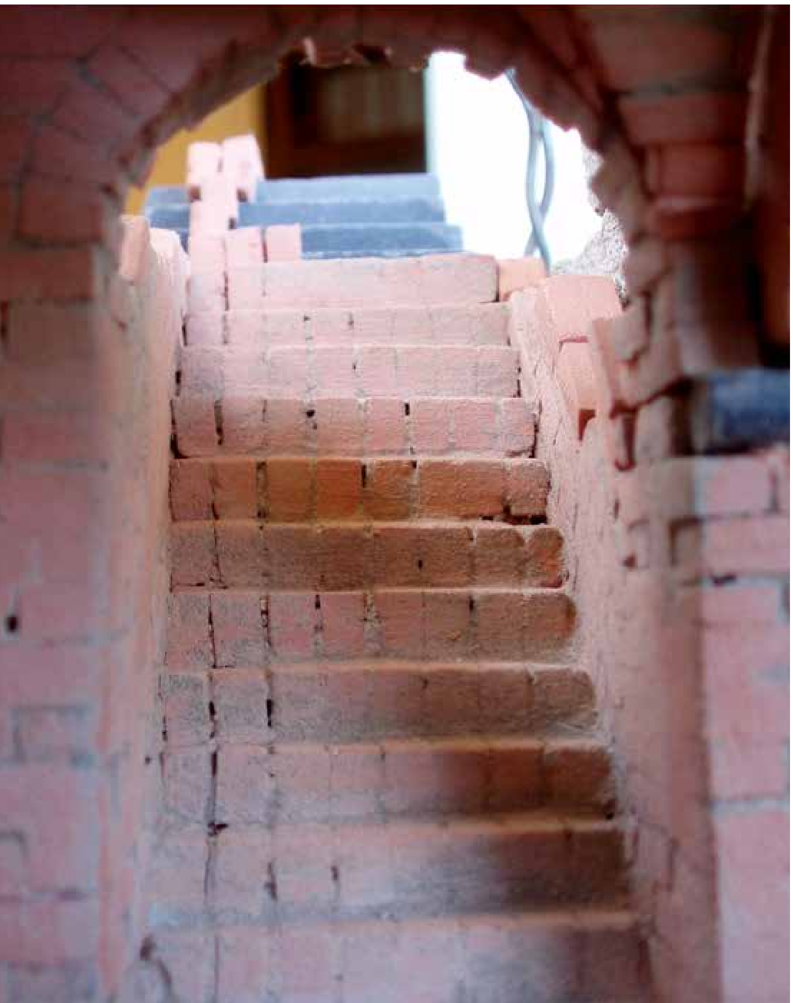


Chapter 22

BRICK STAIRCASE *(part 2)* and closing of the CISTERN







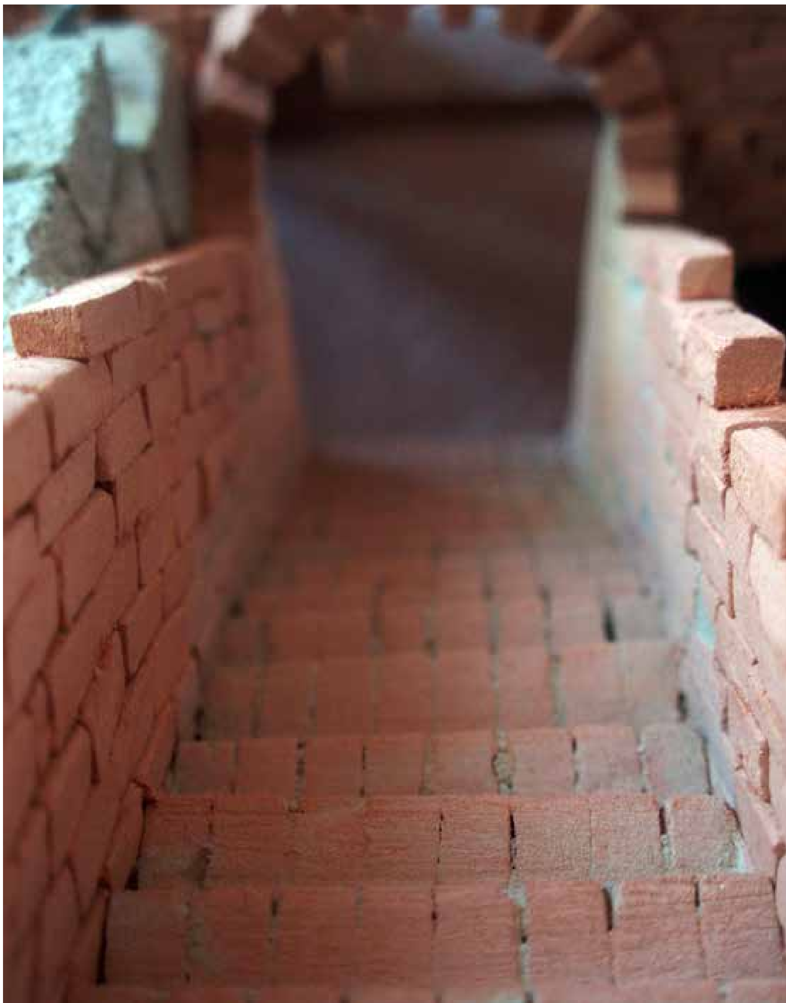
The vaulted roof of the cellar is almost completed, only a cross vault is missing, as well as the painting and finishing of the walls and some pieces of furniture. In order to close the whole basement and start the elevation work, it's still necessary to bring the staircase, complete with walls and barrel vault, up to the ground floor.

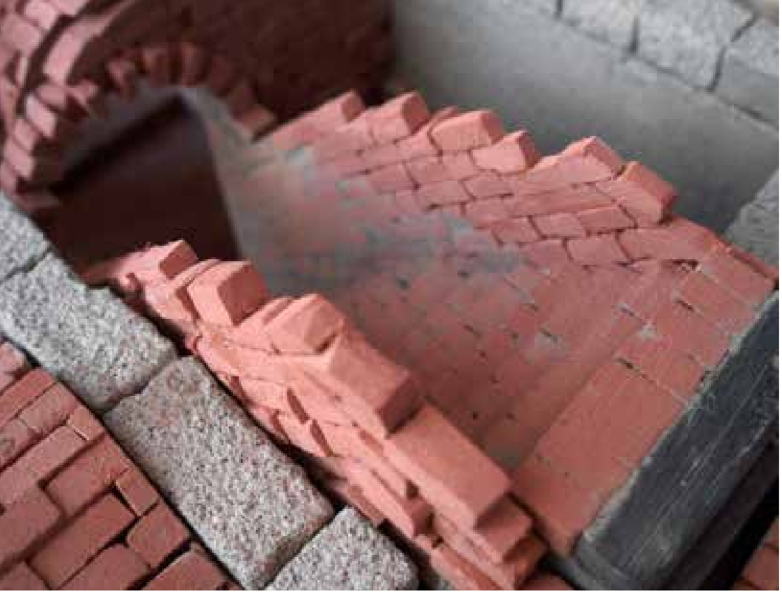
First I need a base for the new steps. Starting from here the masonry will be in stone or brick and I'll drop the use of concrete. Reinforced concrete was very helpful to give stability to the building and I'll keep inserting wire into the walls, but from now on the structure will be built observing more appropriate techniques for a medieval palace.

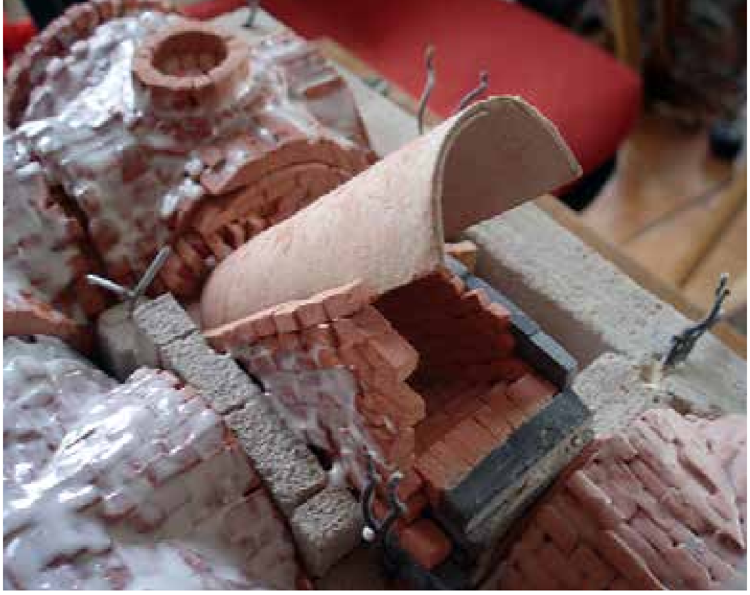
Following the same (suicidal) slope of the staircase, I add four new steps. I've recently found I'll need one more to reach the upper floor, but I've not decided yet whether it will be brick or stone to conform to the entrance floor.

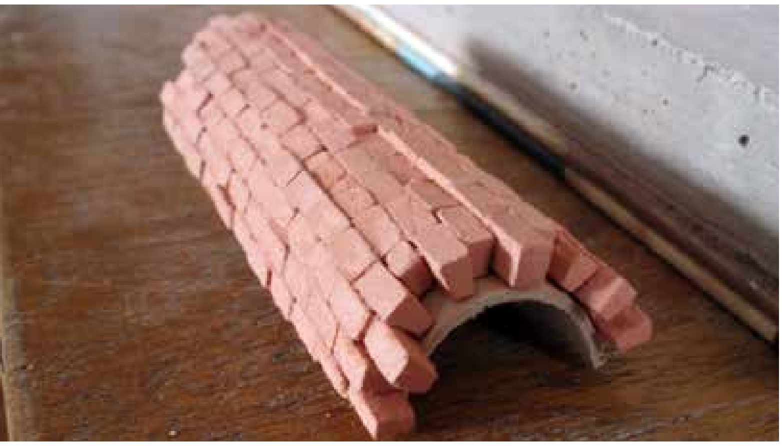
Once the heights have been defined and the base has been placed, I lay the bricks following the same procedure previously seen: laying with glue / first sanding / cleaning from dust / grouting / second sanding / final dusting.

Done. If stumbling on these steps could already cause some fracture, I'd say that the fall now has a good chance of being fatal...





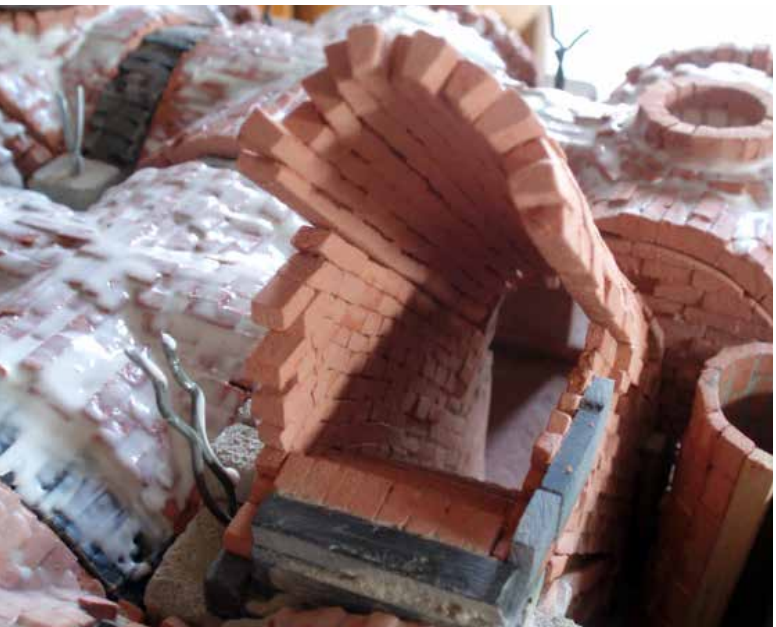




To go on with the work, I must extend the walls on which I'll place the vault that I'm going to build, being careful to keep them parallel to the steps. To make the centring, I cut a piece of curved cardboard (another segment of toilet paper roll) and once moistened it I place it inside the stairwell so that it fits the width.

When it's dry I remove it and build on it the barrel vault by repeating the steps already seen for the tunnel vault (see chapter 9).

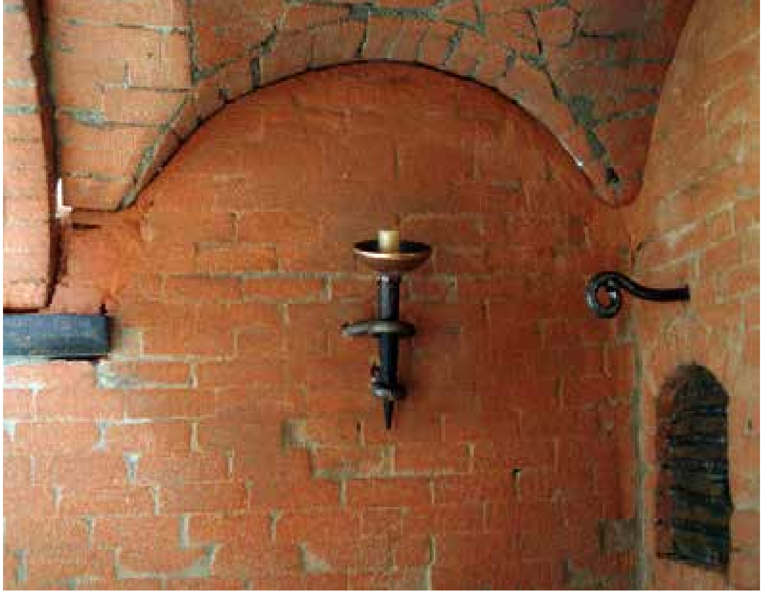
The bricks are slightly larger than those used for the opening arch of the staircase and do not fit together perfectly. I'll think about it later, for now I'll just check the joints between the walls and the vault (that needs to be filed a bit on the inside) and I'll resume the work on the water cistern.

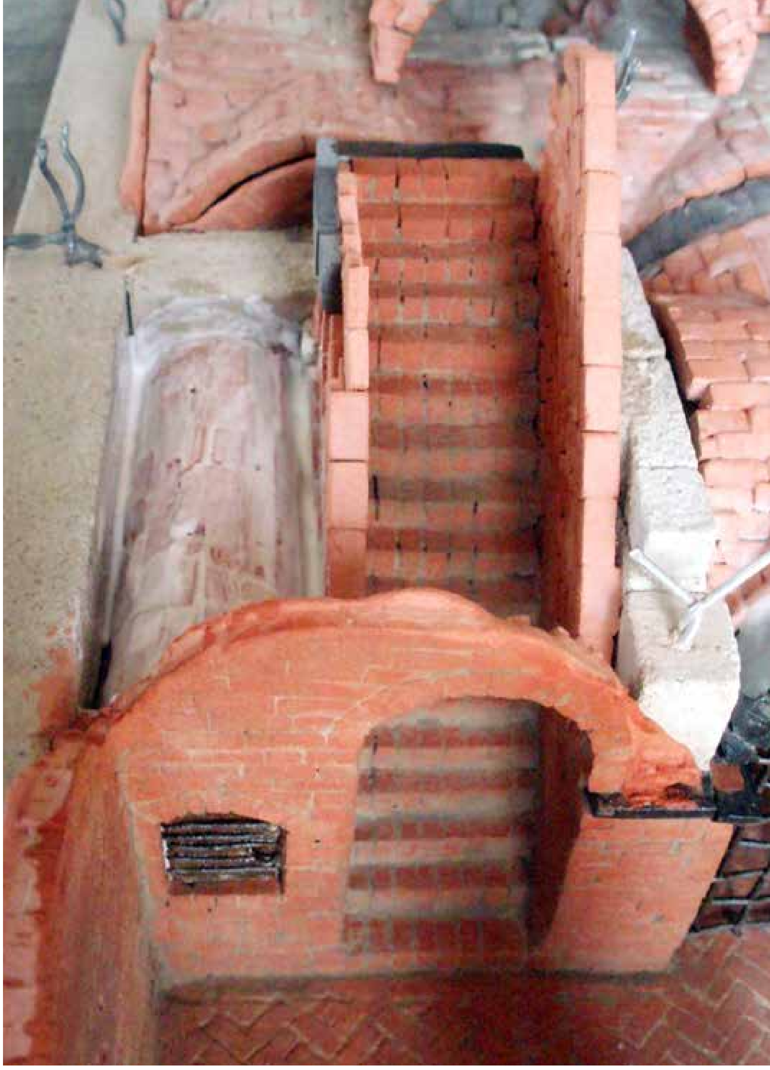


First of all I glue the door permanently, (it was simply layed so far). Unlike the jail door, this will no longer be openable. I amuse myself for a while with the idea of inserting some objects into the cistern: a coin, a message, a chest full of gold... In short, something that can be recovered by future mini-archaeologists. However, the indecision is too much, and almost without realizing it I end up gluing the vault leaving the cistern mysteriously empty.

But in retrospect... what's more charming, Tutankamon's tomb with all its funeral furnishings, or the mysteriously empty interior of the great pyramid?

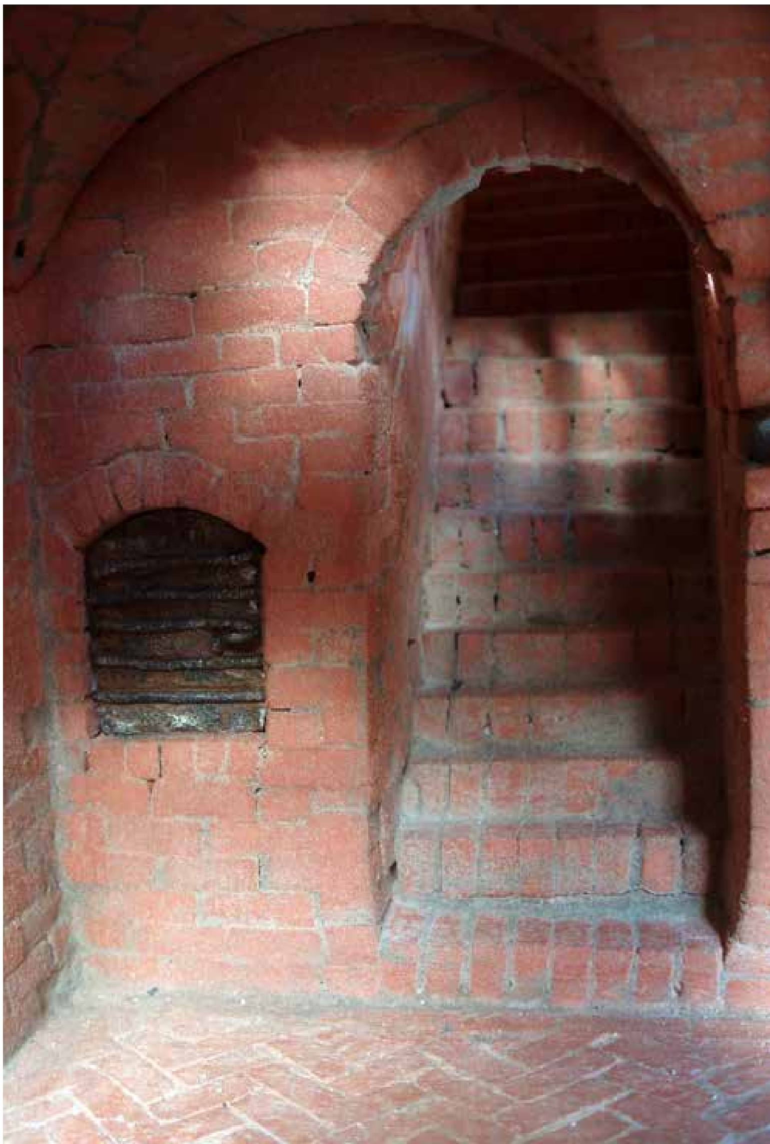
Actually I have an idea to insert a "foreign object" inside the Domus, but I'll talk about it in another chapter.





Now the cistern is finished and the staircase has its beautiful vaulting roof, even if it's not complete in its full length.

After the varnishing of the wall, all that remains to do is the reposition of the vaults and some finishing touches. I take the opportunity to insert a ring into the wall that can be used to lower the bucket into the cistern, and to definitively mount the torch on the wall. This last operation will prove to be useless, but we'll see later why. For the moment I lift the cellar vaults for the umpteenth time and get ready to put my hand on the pantry...



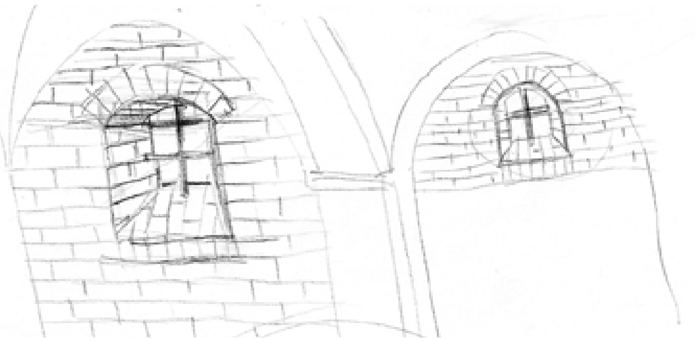
SIZE (in mm)
barrel vault: 30 x 15

MATERIALS:
paper roll, clay bricks, slate, vinyl glue, cement, water

TOOLS:
tweezers, pincers, putty knife, hacksaw, sandpaper, files

Chapter 23

CELLAR WINDOW



One of the main characteristics of my project is the final closing of the floors as the work goes on, like in a real building process. Once the vaults are sealed, the interior of the basement will be visible only through some designated openings (the tunnel, the side arch and the back wall, That will remain open on all floors like in a dollhouse).

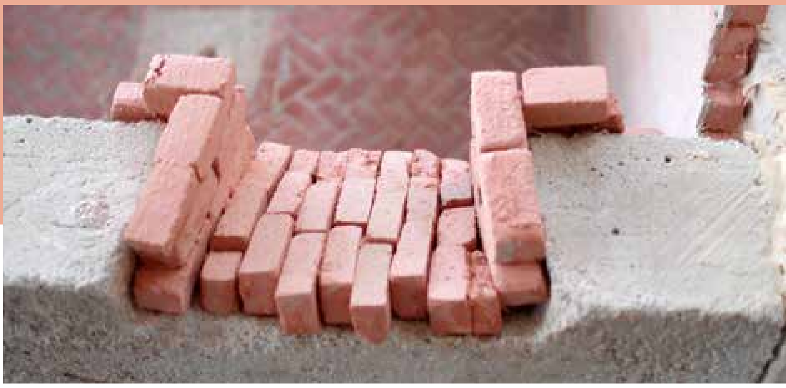
At first I thought that the arch would have been wide enough to see the whole interior, but then I realized that, due to the position of the columns, once the construction was complete it would be impossible to have a full view of the gate and the underground tunnel. This, in my opinion one of the most suggestive corners, would remain visible only from the opposite wall, which is supposed to house the wine barrels. But moving the barrels elsewhere, the wall would remain empty (at least in the upper part), giving me the opportunity to create a further opening. There will be some extra work to do, but I think it might be worth it.

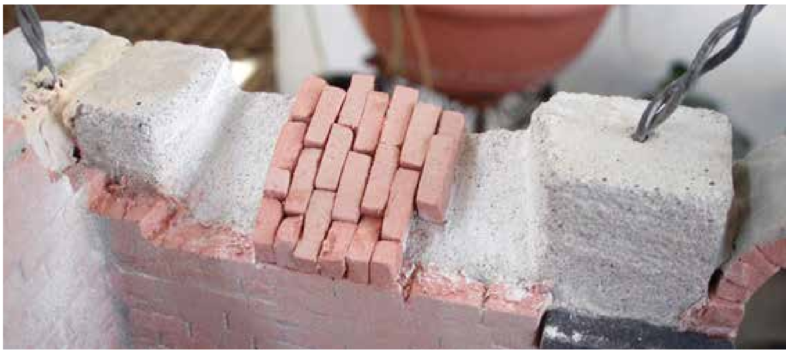
Also in this case I'll have the opportunity to prove my inexperience by making a mistake that most likely would have cost the job to a common bricklayer. Fortunately I am architect and bricklayer at the same time...

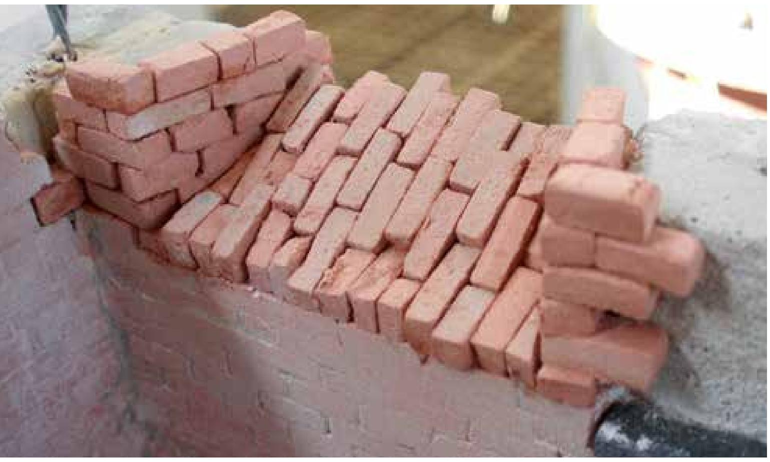
But let's see where the error lies: after marking with a pencil the shape that I'll have to cut into the concrete wall (wider on the inside), I proceed (inexplicably) to cut in the opposite direction, that is making the lines converging towards the interior.

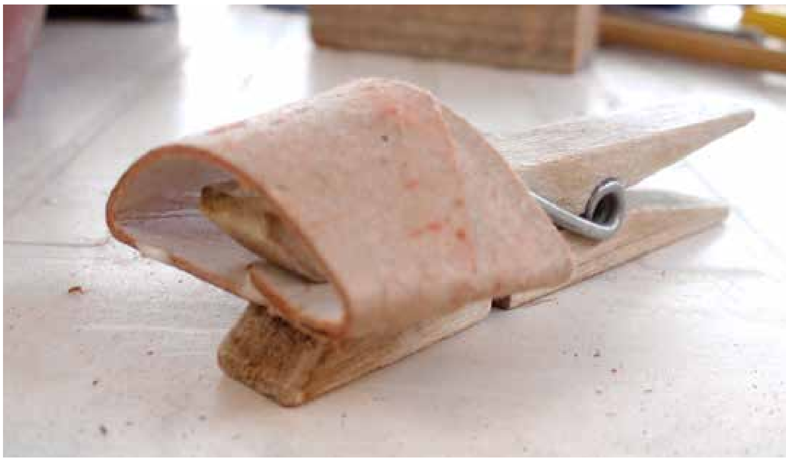
Here, the oblique cut of the wall is not simply an aesthetic habit but is designed to let in as much light as possible. So it would not make sense to build an opening with the narrow side inwards, unless it's a defensive slit, where a greater width on the outside would allow a better view and would ease the movement of a weapon without the need to expose yourself too much. But that's not the case!

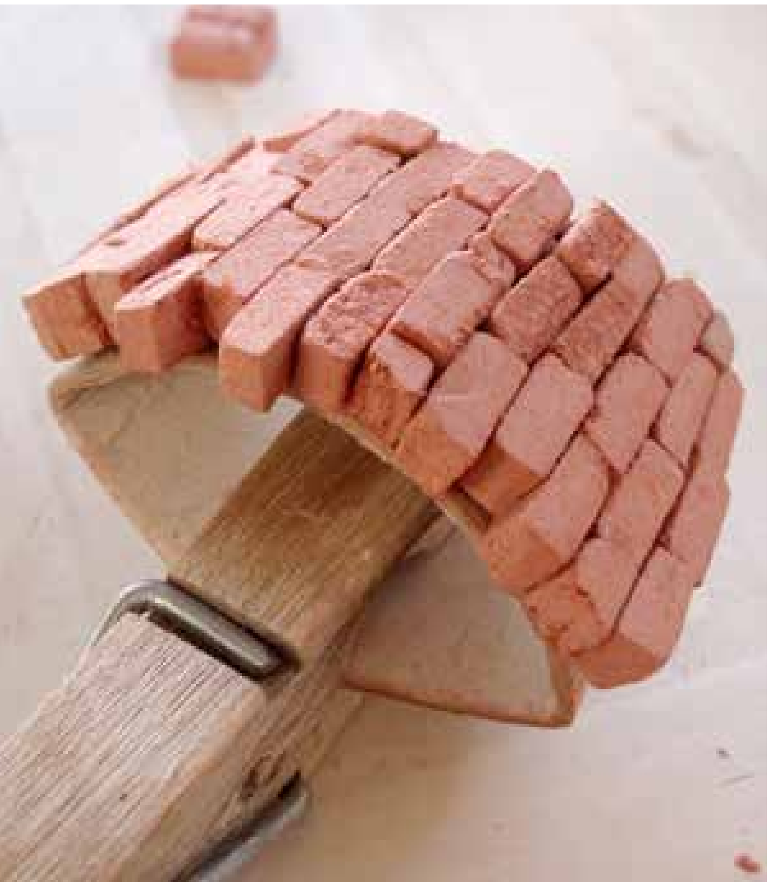
When I notice my mistake I've almost finished covering the wall with bricks, so I decide to let the glue dry and bulky remove both sides of the window to adapt them to the new shape.

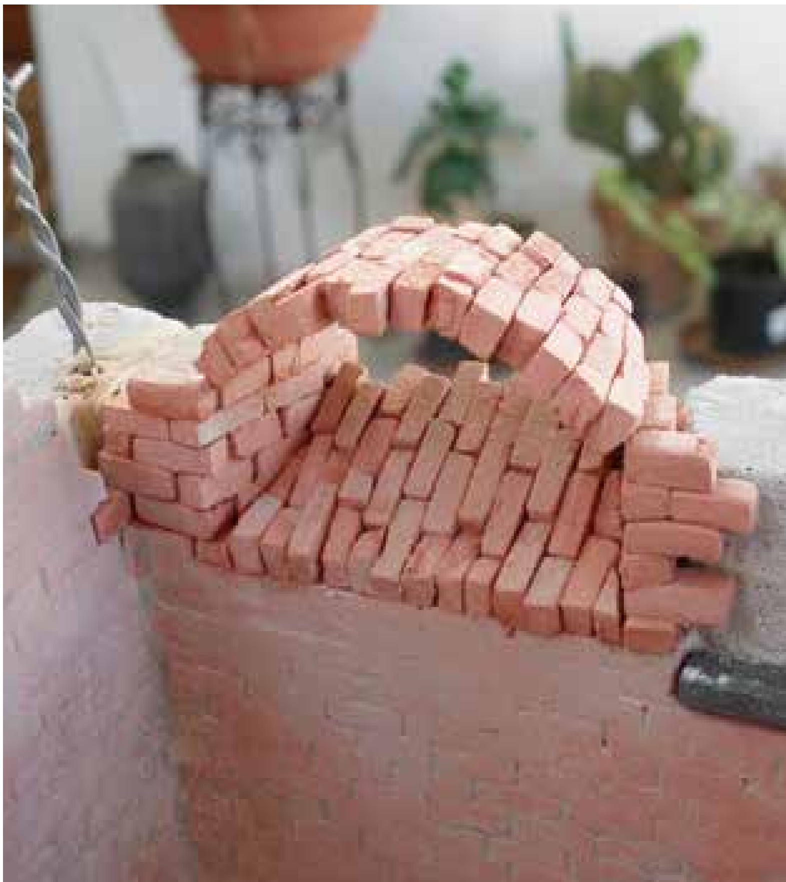


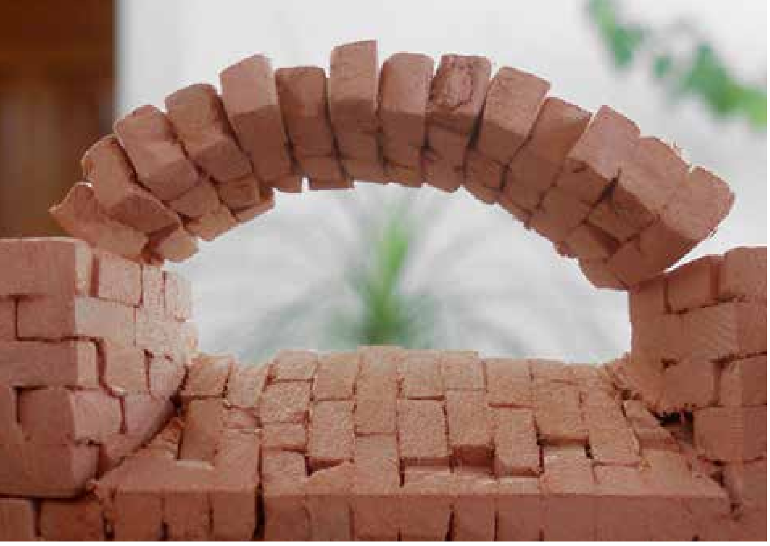


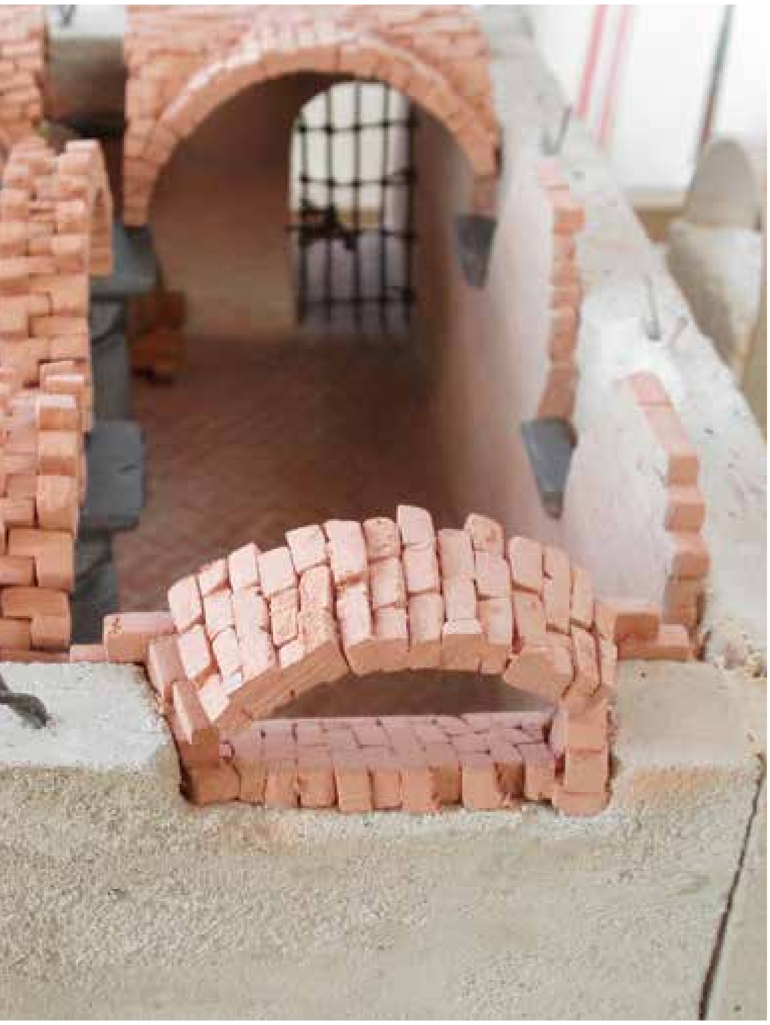












On a temporary support I build the upper arch, that compared to those made so far has an additional difficulty point. In fact, the interior and exterior of the arch have different widths and the arch must match the wall on each side. For this purpose, a clothes peg and what is left of a roll of toilet paper come in handy.

The direct consequence of the aforementioned “mistake” is that the window, originally designed with a more or less square shape (see drawing at the beginning of this chapter), is now decidedly wider. The upper arch in fact coincides almost exactly with the curve of the vault.

After all it’s not a big problem, this way it will be easier to look inside once finished. And... who knows how many architectural variations in our historic buildings originated because of errors like this!

Now is the time to complete the window structure, and I’ll start to do it by making the railings. The raw material is the usual wire, but on this occasion I’ll merge the two different techniques experimented so far.

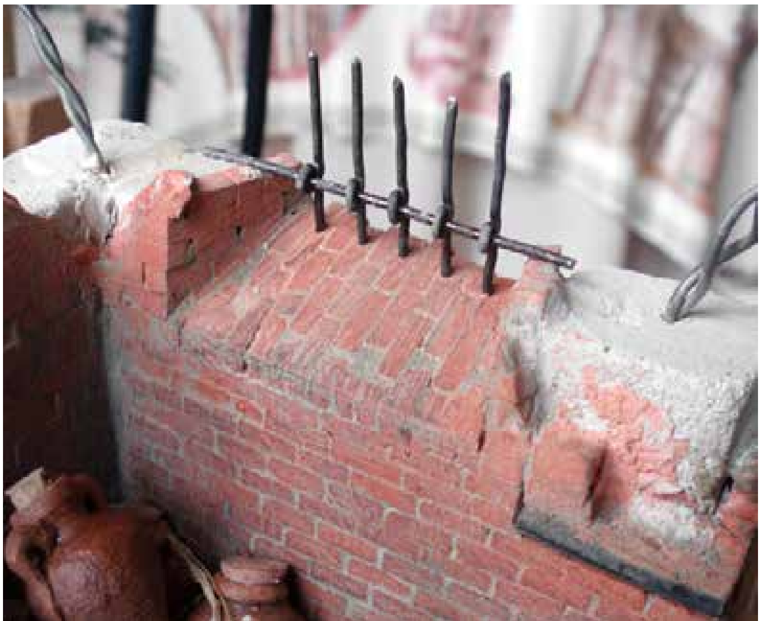
In the gate (chapter 16) I mounted the grid by wrapping the horizontal bars around the vertical ones without using a hammer. In the prison cell (chapter 28/36) these were first intertwined by making a sort of net and then beaten cold. Now the vertical bars will wind up on a single horizontal bar after being folded in the shape of a buttonhole.

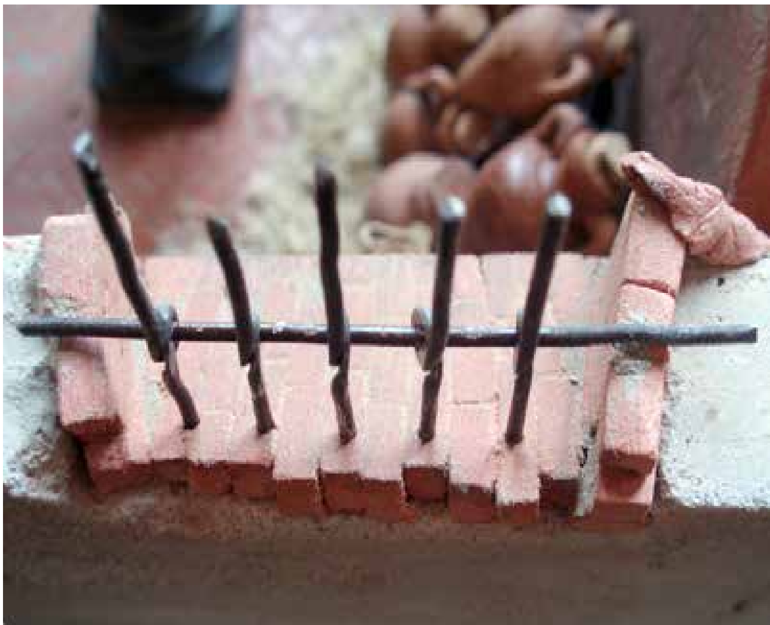
The structure thus obtained is not very stable, so I spray it on a little spray glue (I bought it, now

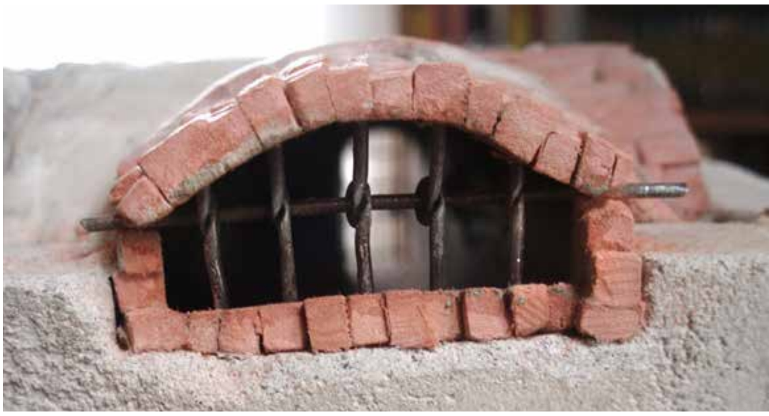
I must use it!). This way I'll be able to align the bars without them slipping away with every little movement.

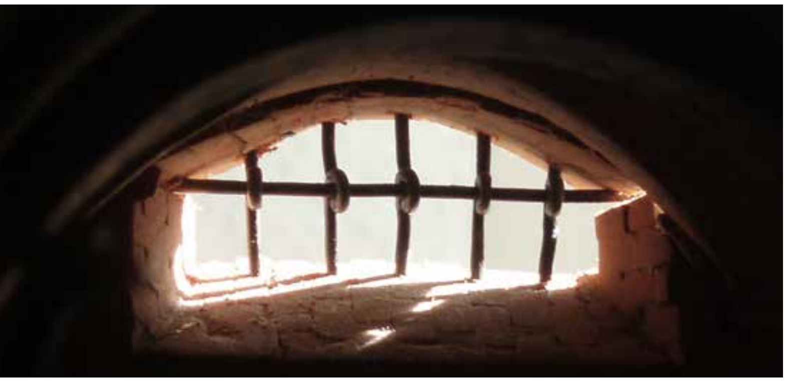
At this point I open a series of holes into the wall at a regular distance, where I'll have to insert the railings. The small brick archway that will serve as a cover for the window is still separate from the rest of the vaults and has not been painted. However, since it coincides in height with one of the cross vaults, I find it better to join it to the cover so that the joint between pieces is not too visible after assembly. The next steps will then be the filling of the joints and the varnishing of the whole piece.

When the work is done I also open holes on the surface of the arch where it joins the bars and check the result. Further small details will be fixed at the closing of the vaults, but I'd say that with this, the window of the cellar is now finished!









SIZE (in mm)

wall thickness: 20
opening (outside): 32 x 5 + 5 (arch)
opening (inside): 38 x 9 + 6 (arch)
window's final width: 30
max height: 10
height from the floor: 56

MATERIALS:

clay bricks, vinyl glue, spray glue, iron wire, transparent varnish

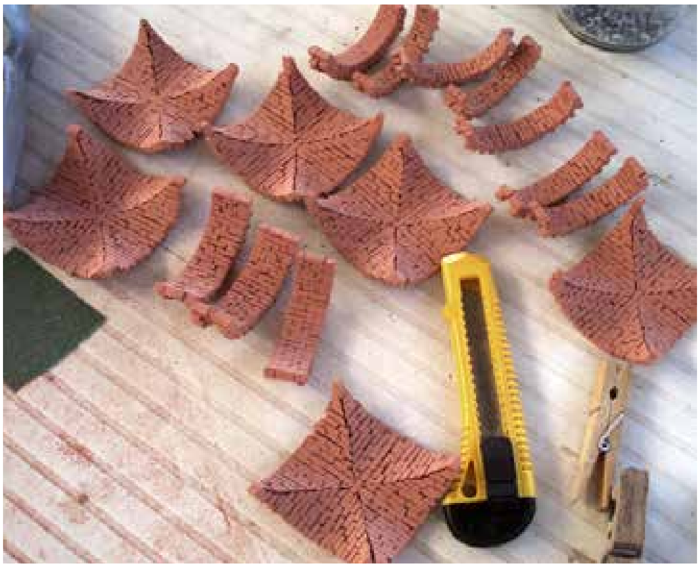
TOOLS:

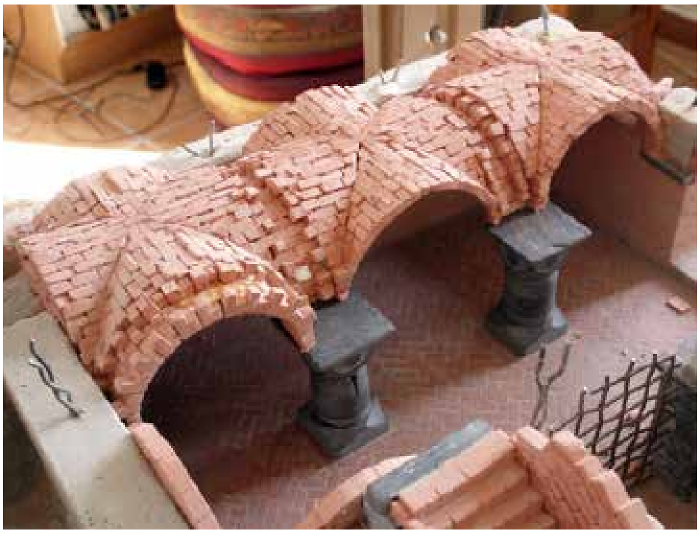
tweezers, pincers, putty knife, sandpaper, files, cardboard, scissors, pencil, brush, Dremel tool with diamond cutting wheel and drill

Chapter 24

Assembly of WALLS, ARCHES and VAULTS

(part 1)

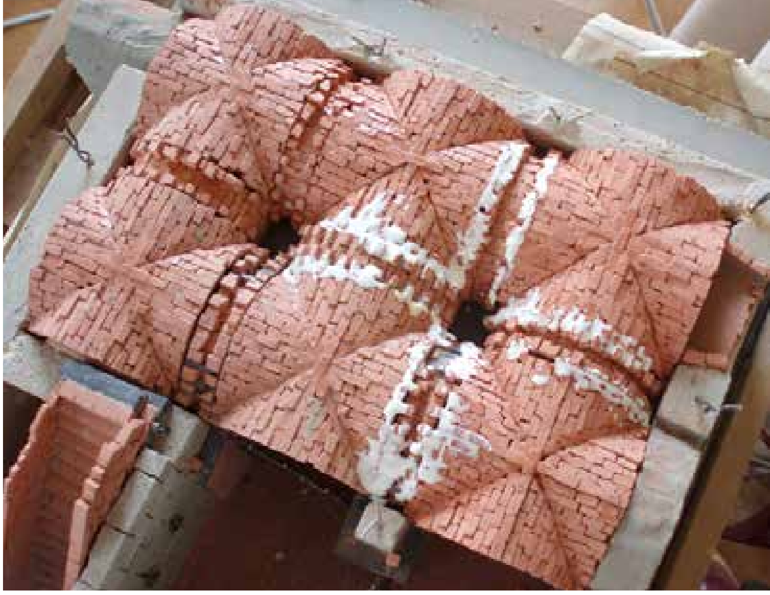




Here begins one of the most delicate phases of the construction. We've already seen the making of walls (chapters 7, 10), the arches (chapter 21/27/29) and the three different kinds of cross vaults (chapters 14/15, 18/19). Now that all the pieces are done I need to carry out the necessary finishing so that they fit perfectly together, as well as with the pillars and columns.

Since the construction of the first vault I realized that the harder task would come at the end of the work and I never stopped thinking how I could proceed so that the structure did not show discontinuities between the different parts after the final closing. Once the cover was mounted, it would have been impossible to act on any defects from the outside. In addition, even retouching small details with the help of a curved brush and some cement, I'd should to do it with the walls already varnished and "aged", making the contrast with the rest of the structure even more visible.

My intention at first was to finish the pieces and place them in the same sequence, correcting any inaccuracies one by one. This would not allow me to operate in comfort due to the very small work space, forcing me to focus on the parts left visible from the outside and leaving out the hidden ones.



The possibility of joining arches and vaults and then assembling the whole cover in no more than three or four pieces came to me while I was correcting two arches to make them fit together. By gluing the six vaults of the cellar area with their seven arches, I could convert them into a single piece and then turn them over to finish the ceiling comfortably, leaving the joints between the vaults and walls to a later time.

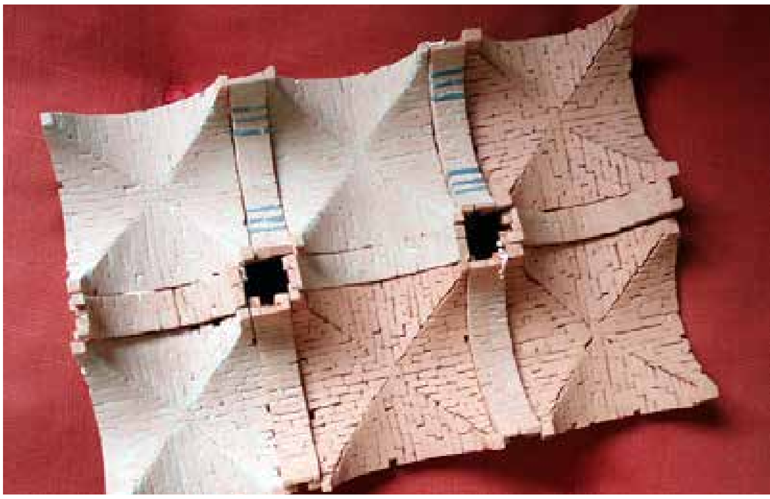
Here's how I do it:

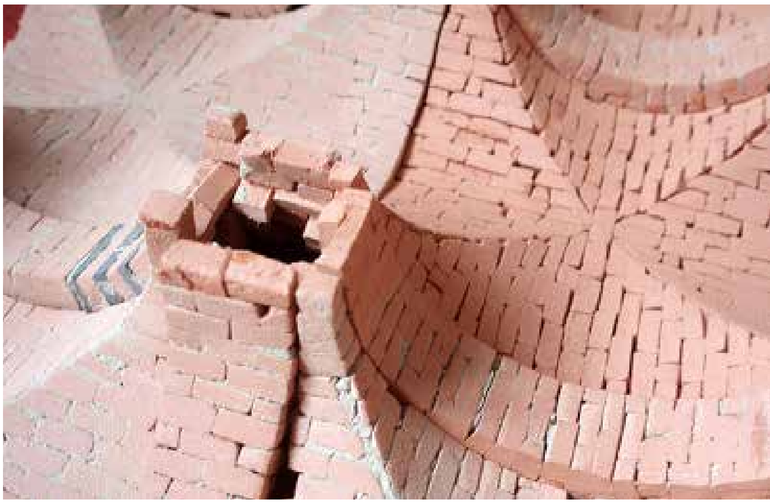
After positioning the arches and vaults, I cover the joints with a thin coat of glue. When it's dry, I lift everything up very carefully and turn it over to check that each piece is in place. Actually I have to unstick and move one of the arches that inadvertently moved during the operation.

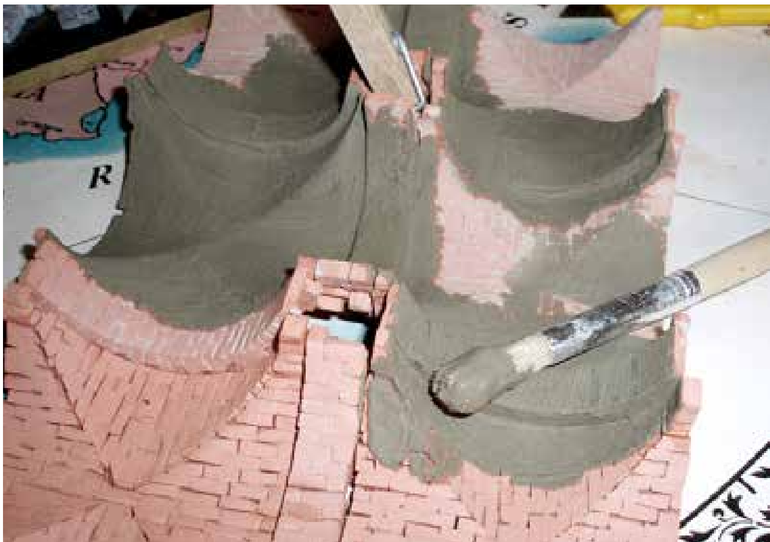
Three of the vaults haven't been grouted yet, but since I'll also use cement to fill the joints I decide to speed up this phase by covering the entire structure. This doesn't prove to be a good idea, because the massive amount of water and cement softens the Das making the piece dangerously fragile and subject to deformation. To remedy this, I put it back in place under a weight and let it dry.

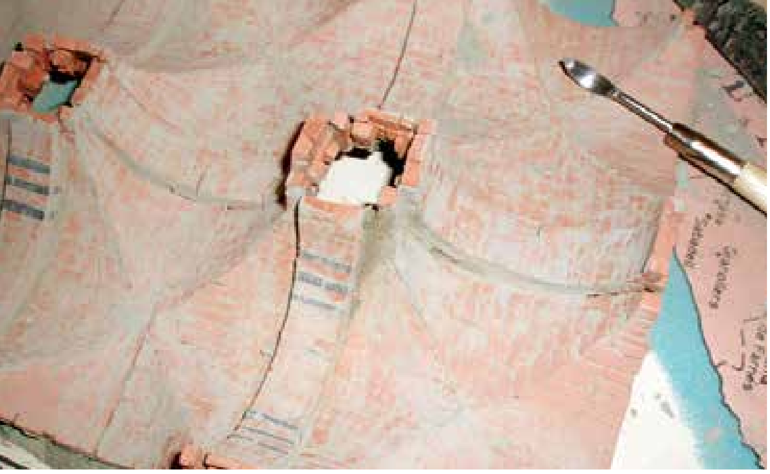
Once the concrete is totally dry I can proceed with the cleaning, that I carry on with sandpaper and a hook that allows me to reach the corners with more precision. Some cracks are clearly visible. This doesn't compromise the stability of the structure that is now well dry, and ultimately give it an unexpected realistic touch.

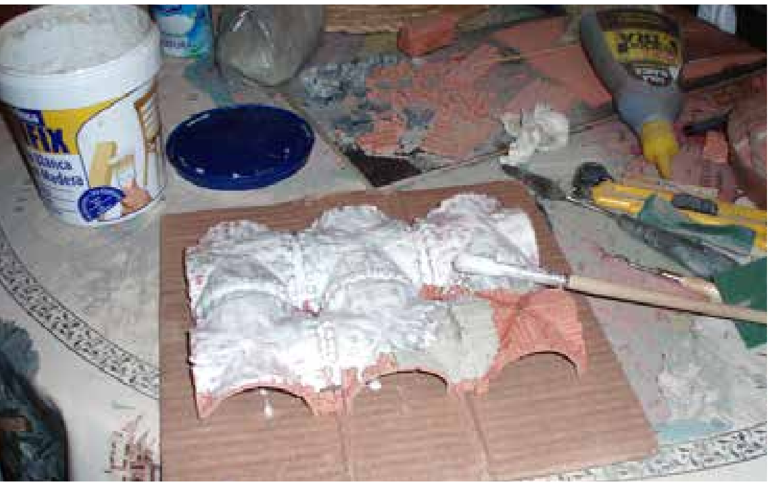
Of course, if it were a real vault I'd have to demolish and rebuild it from the beginning!

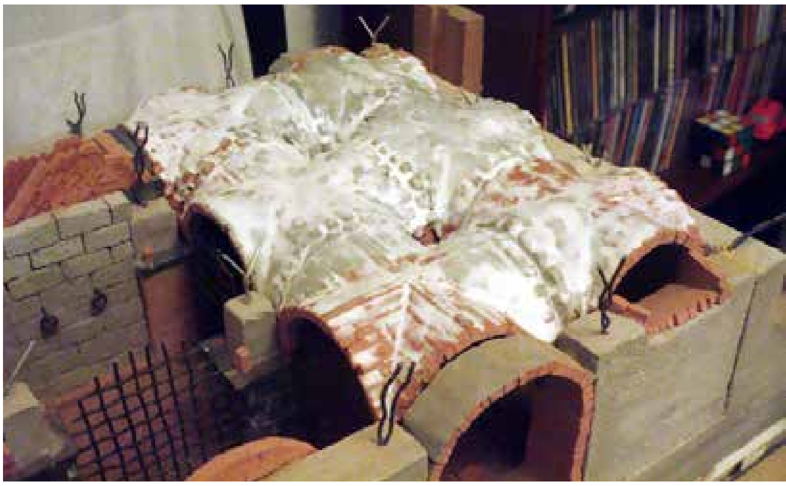


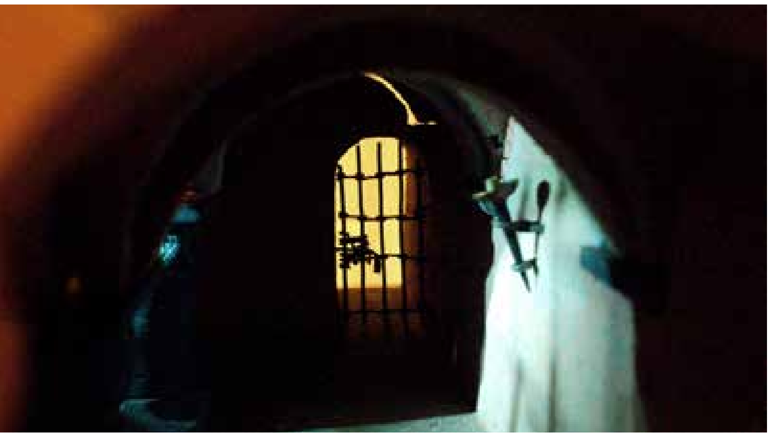








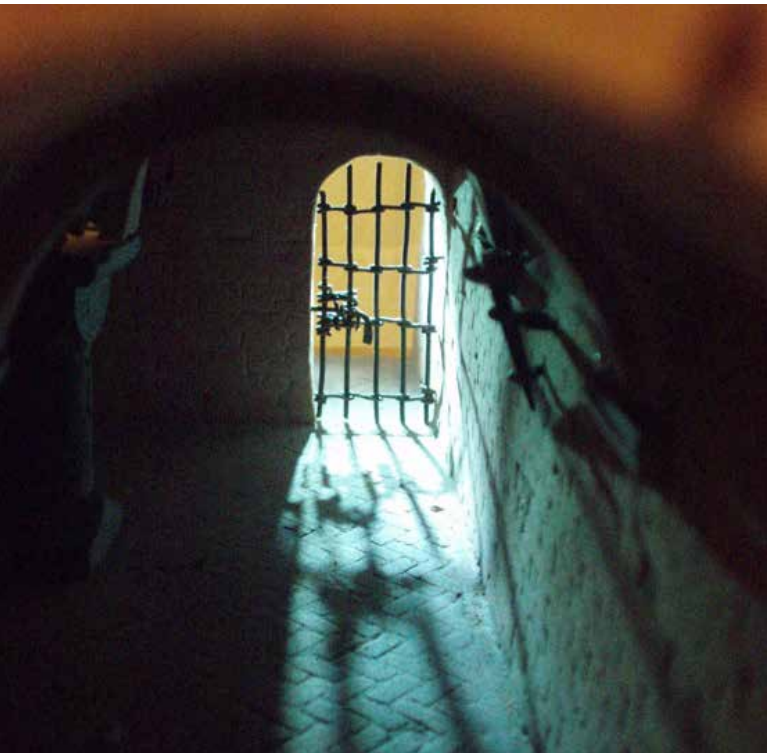




However, to give more resistance to the piece (because now **it is** a single piece), I sprinkle the upper surface with abundant brushstrokes of glue and let dry again.

Peering inside the cellar from the window it almost seems like the job is done. The light no longer filters through the vaults, but only between the base of the vaults and the walls. A few more adjustments and the construction of the basement will be completed.

Ooops! I forgot that the other half of the cover is still missing! I was fooling myself ...



MATERIALS:
vinyl glue, cement, water

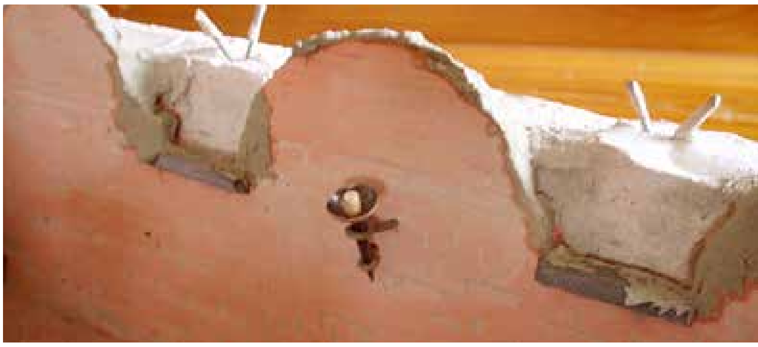
TOOLS:
tweezers, brush, sandpaper, clay modeling tool

Chapter 25

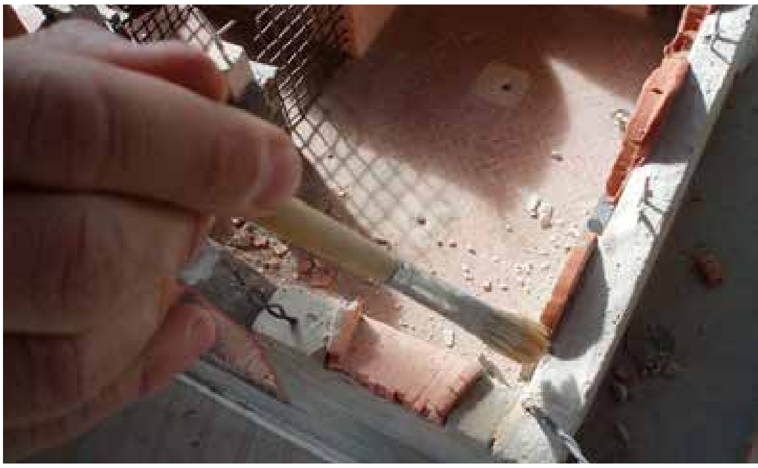
Assembly of WALLS, ARCHES and VAULTS

(part 2)

In the previous chapter we saw how, by joining together arches and vaults I managed to fix the inaccuracies where they did not match. Despite my attempts to operate with the utmost precision, the gap between elements is still quite visible.

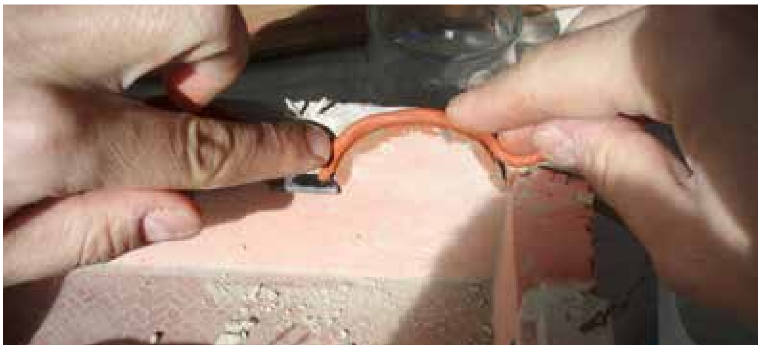


Now that the ceiling is made of a single piece, it's impossible to work from the inside when it's correctly placed. The only way to minimize imperfections is to operate on the walls before assembly.

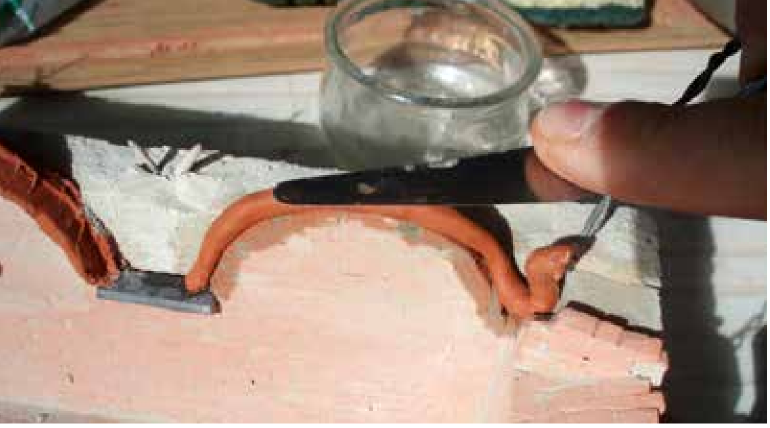


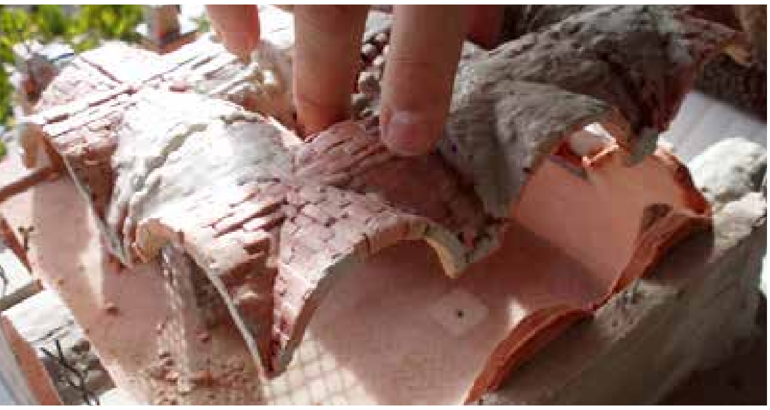
A first test, made with cement, doesn't give a good result. It's only a slightly thicker grout than usual, and once dry it's impossible to use sandpaper without it ending up in dust. So I realize that if I used the DAS clay instead of cement, I could still model it while wet, creating a perfect union between the two parts.

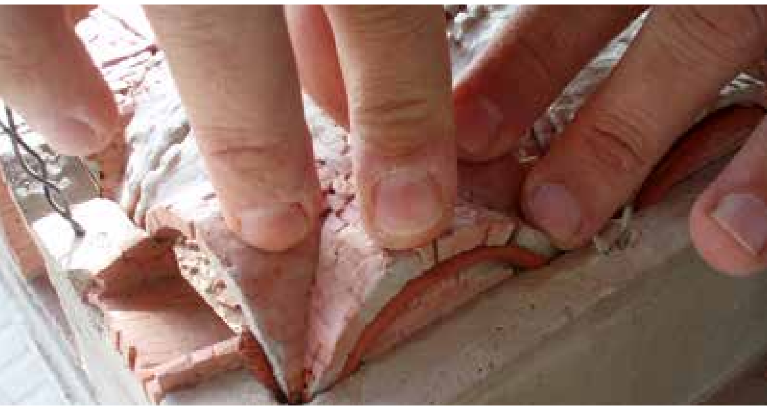
This is obviously not a real construction technique, but it's also the only way that I found to finish the structure without using Dr. Cyclops's miniaturizing ray before time, since it consumes a huge amount of energy.



Before proceeding, I moisten the areas on which I'll apply the clay. Then I cut out small pieces of material from the newly opened package and turn them over between my fingers to create little worms





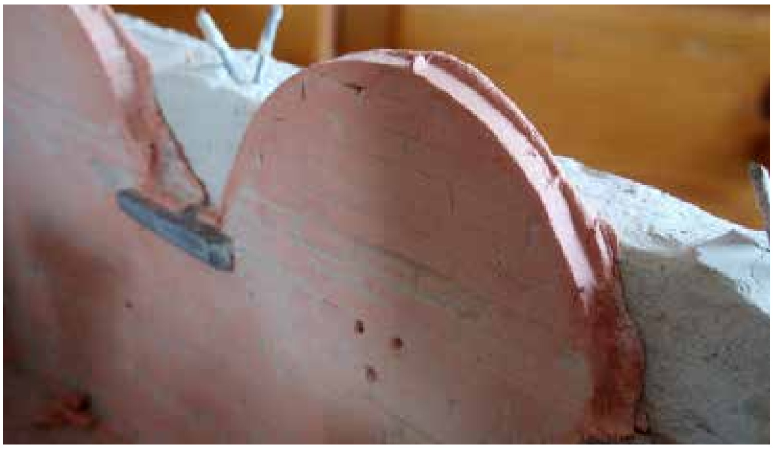


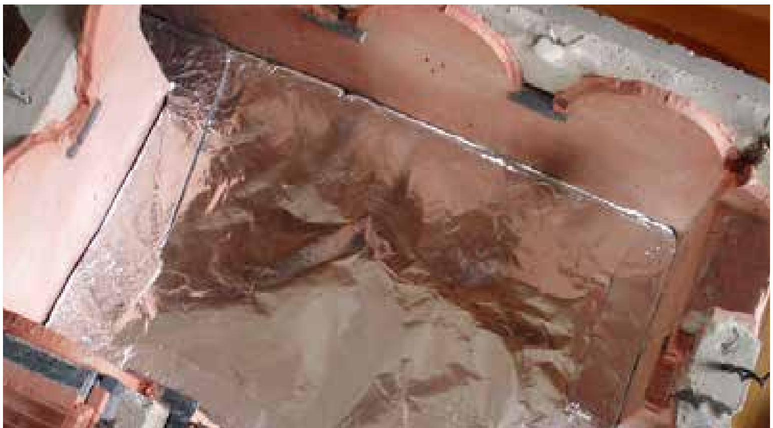
of the same length as the arches. I have to work quickly to prevent the material from drying out too early, but even if the wall I'm working on gets a little dirty it's not a big problem. Once dry, the clay will still be easy to clean up and it's preferable to keep abundant so that all the joints are filled.

Once the clay rolls have adhered to the arches, I reposition the vaults making some pressure to adapt them to the profile of the walls. Excess material escapes to both sides and can be removed later. At a first pressure the Das, even if wet, doesn't stick to the vaults (still dry and dusty), but repeating the operation several times could end with some parts lifted up and the work could get harder. In short, the first take must be the good one.

For the finishing touches, obviously, it will be necessary to wait again until everything is dry. At that point the walls and vaults will fit perfectly and will be ready for varnishing.

To avoid staining the floor with paint, I spread a layer of aluminum foil over the whole surface, until it touches the base of the walls. It's not a difficult operation, but as I want to cover the full floor, I lose on it about ten minutes... just to find out that it's been completely useless. The varnish infiltrates the space between the floor and the sheet, making everything dirty. Fortunately, this is not too serious and the stains can easily con-





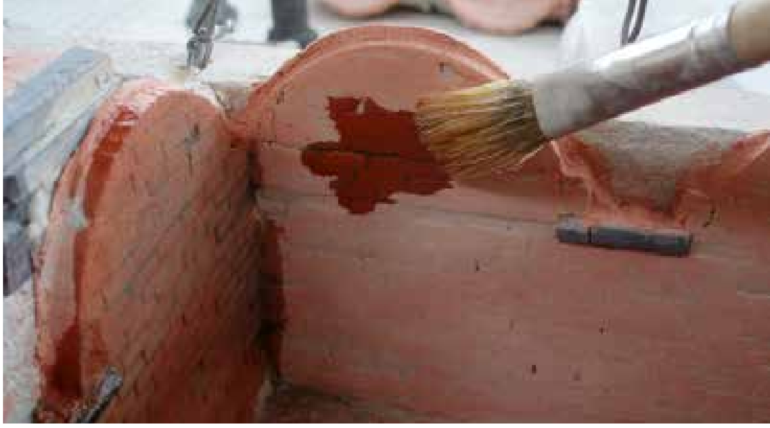
form to the rest of the surface by dusting again a little cement on it with a dry brush. I remove the foil and go on with the varnishing.

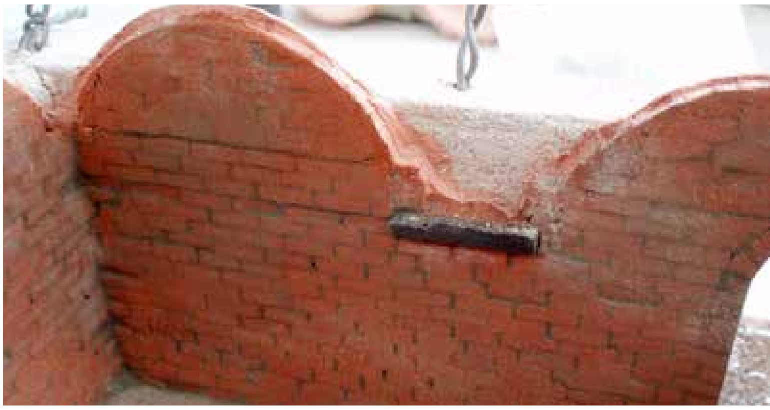
The procedure is the same I used to paint the floor (see chapter 20/22), with the difference that now I know exactly what I'm doing and after the first coat of paint I throw a sprinkling of cement on the wet walls to obtain the fateful "dirty" effect. The varnishing is faster than expected and a second coat seems unnecessary.

Once dry, the walls take on a slightly lighter color than the floor. To make this difference unnoticeable, the following day I proceed to a brief sanding by applying light pressure with a steel spoon, which reduces the porous effect of the Das clay and makes it darker.

Not yet convinced, I finish by applying a coat of olive oil. At least it doesn't smell like the paint and I can work at home. I repeat the same operations on the columns and vaults, now perfectly joined together, and check the result after repositioning them under a weight to avoid deformation.

Then, finally, I can take a look inside.





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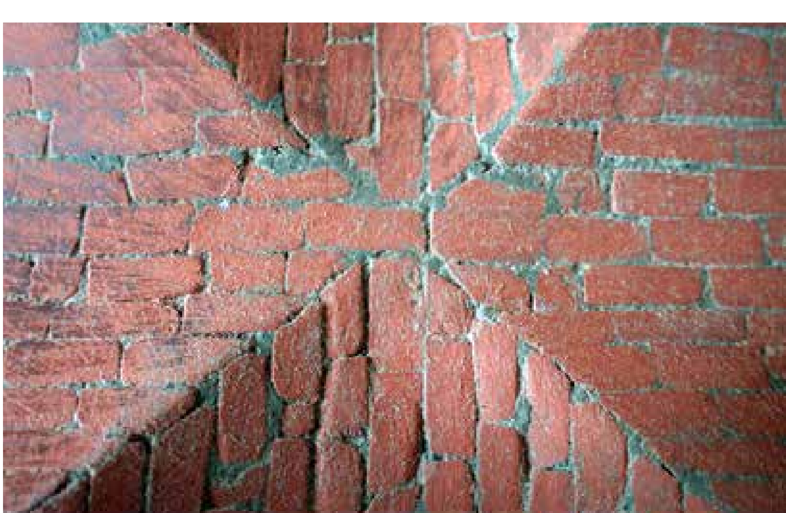


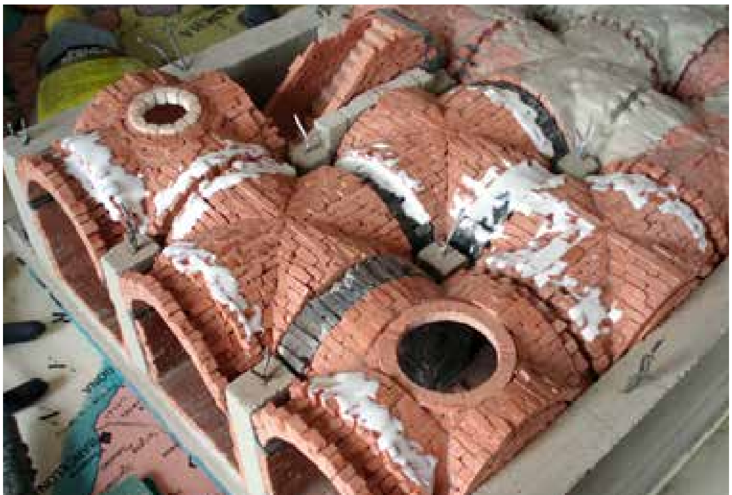
Now let's see how the work proceeds in the other half of the basement, where I still have to deal with the assembly of the arches and vaults, including the stone arches of the prison and the two vaults with trapdoor.

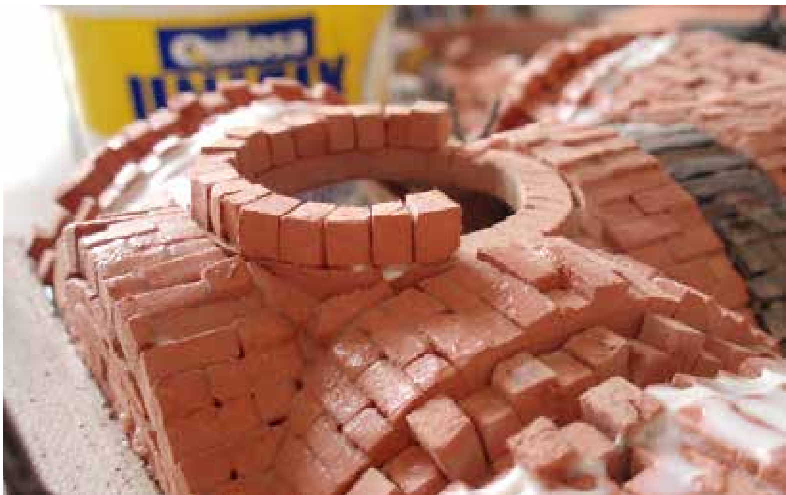
The work is more delicate here as one of the stone arches (the first to be built) is permanently glued and the shape of the ceiling is quite irregular.

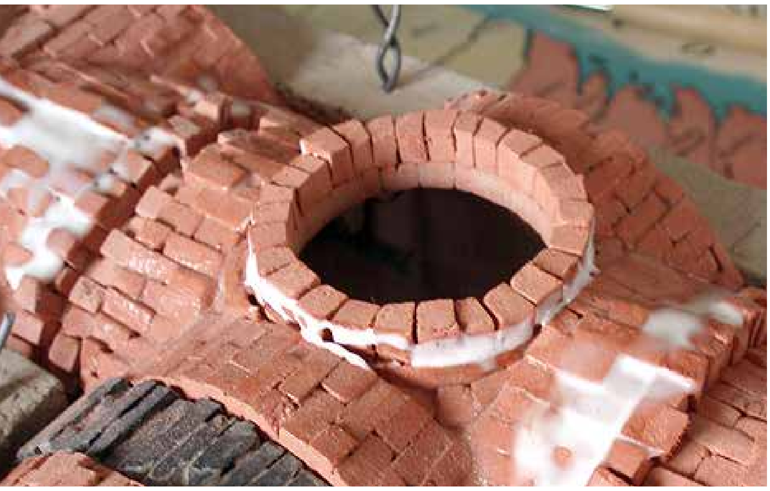
I decide to proceed in stages, gluing the vaults in three separate blocks that can be joined later. This will make my job easier when I'll have to give the finishing touches to the walls and the prison cell.

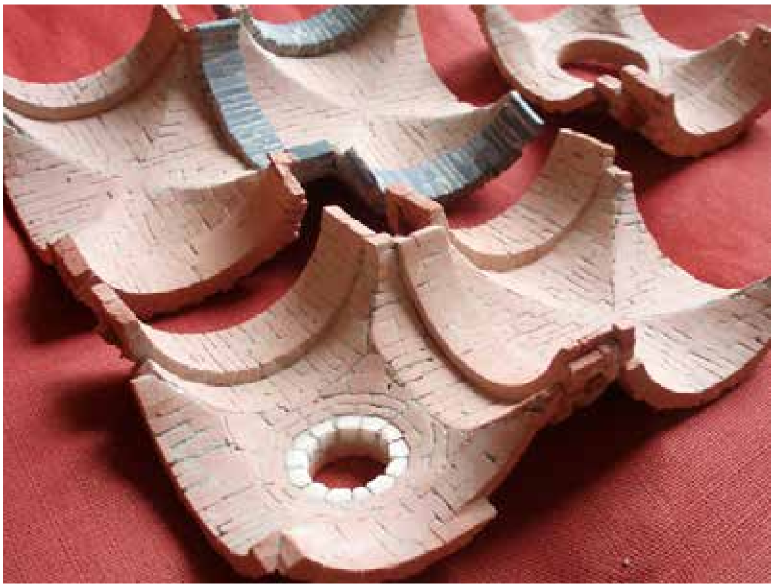
At the same time, I start raising the perimeter of the hatches, that soon will reach the level of the ground floor. For now I just add a line of bricks on both, reinforcing the extrados of the vaults with a brush of glue.

Once dry, it's time for varnishing. Same procedure as last time: a coat of paint / cement / oil / drying. First, however, I fix the imperfections of the walls where they don't perfectly match the vaults. A few strips of Das and it's done!



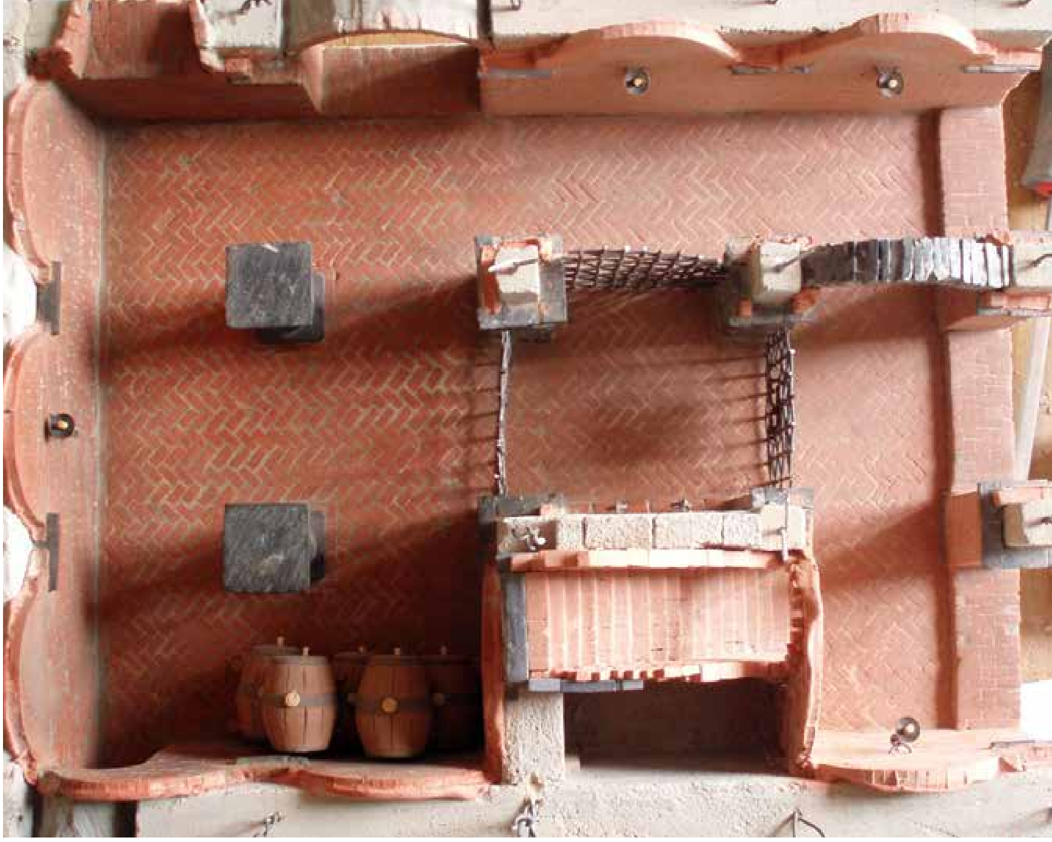






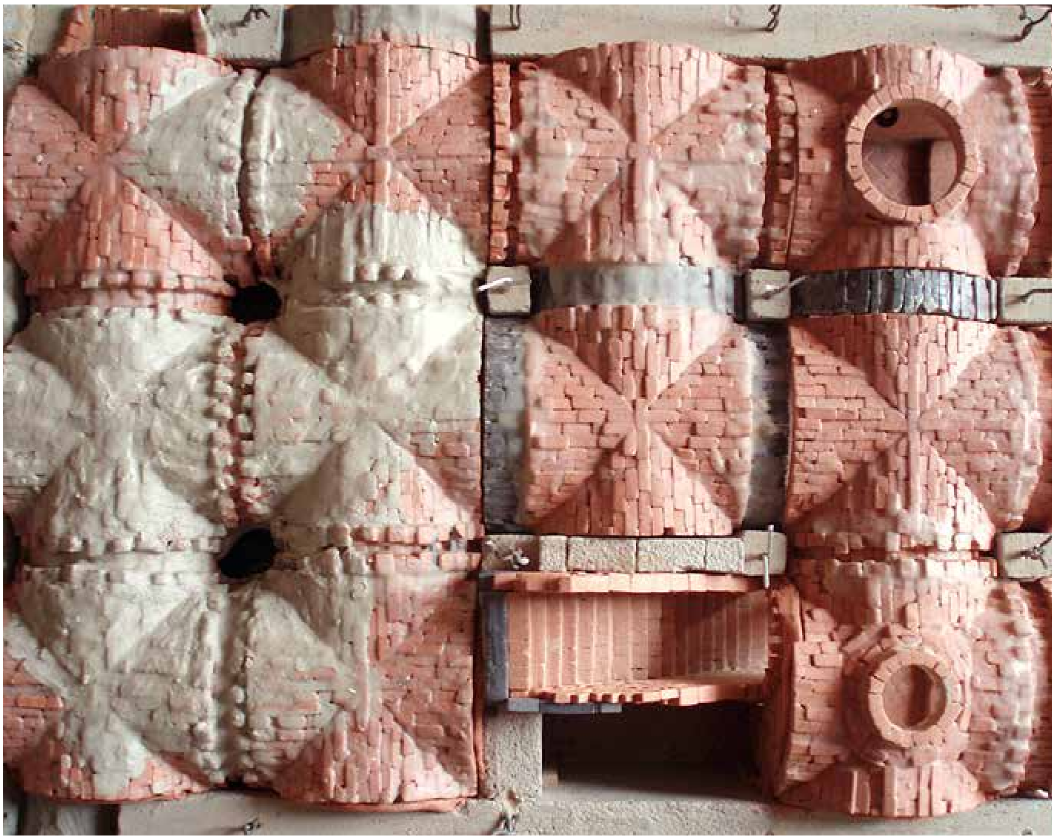
So here's what the basement looks like just before varnishing (the left half is already finished).

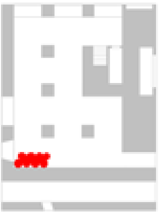
Before I can consider the construction of the basement completed and definitively close the vaults, there are still a couple of things to do... but I'd say that the biggest part is done!



MATERIALS:
transparent varnish, cement, Das modeling clay, olive oil

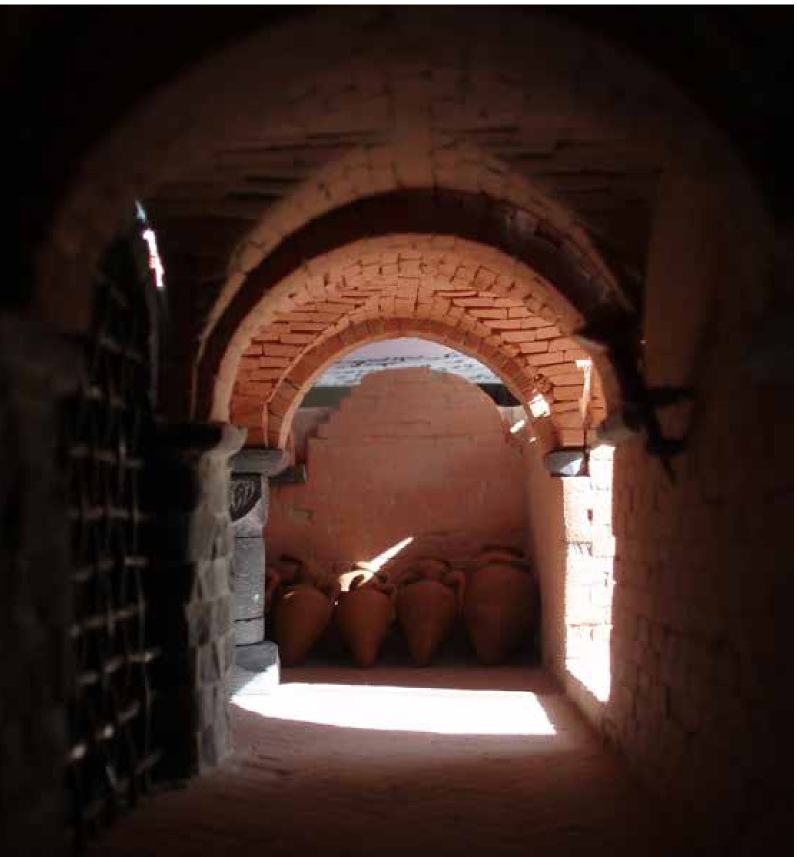
TOOLS:
tweezers, brush, sandpaper, palette knife, spoon, concrete tile (2Kg)





Chapter 26

The PANTRY



Some time ago I made some purchases at the Christmas market, thinking that certain nativity scene accessories would come in handy to furnish the Domus. I've already had the opportunity to use some of them (such as wine barrels) while others wait patiently for their turn, closed in a bag.

Among these there are some terracotta amphorae that I selected among the many on sale. In fact, most of the pieces were made in 1:25 scale and therefore incompatible with the proportions of the Domus (which, I remind you, is in 1:50 scale).

My idea in this case is to create a pantry corner inside the basement. Here, far from light and bad weather, food stocks or other goods for trade can be easily stored. Don't forget that Genoa is a port city and that the hosts certainly carry out a commercial activity, perhaps with their own fleet.

After choosing what could be the aforementioned corner, I carry out some positioning tests and enthusiastically take the pictures you see on these pages.

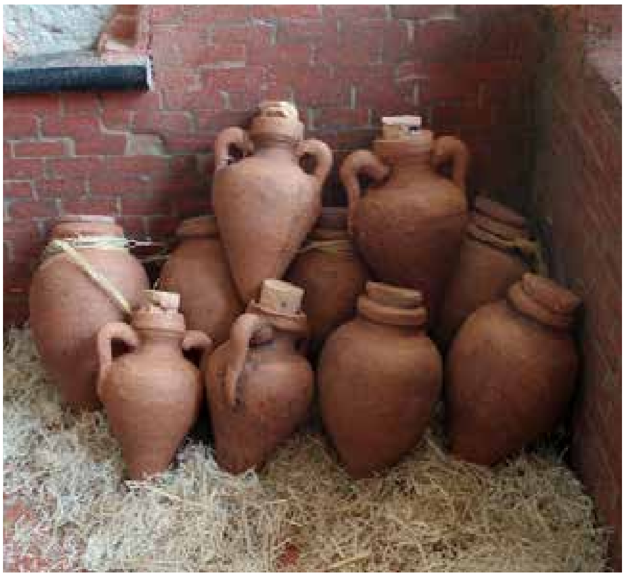
As I've said, they're only tests and the structure of the cellar still looks incomplete, but when the time comes to close the vaults of the cellar, I'll rely on these images to finish the work.

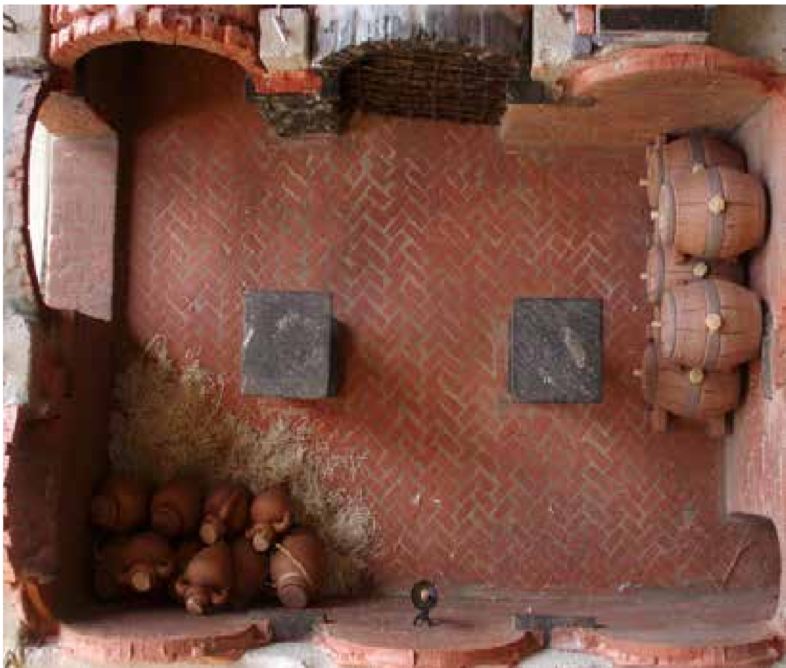
First I have to make some lids for the amphorae, and I decide to use different materials for the two different models. The large ones will be closed with round lids made from hardened clay cutouts, while the small ones will have cork stoppers.

Then, with the hemp previously used for the jail (see chapter 20/36), I prepare a straw mattress that I place on the floor to accomodate the amphorae on it, arranging them like merchants used to do on ships to save space.

The work seems already done, doesn't it? Actually the difficult part starts now. Inside the Domus, no element can remain loose, because once closed it would be impossible to remedy any moved object. So the amphorae will be glued to each other and to the floor, taking care not to leave visible smears from the outside.

The main points of view to observe the pantry corner are the third arch on the back side of the

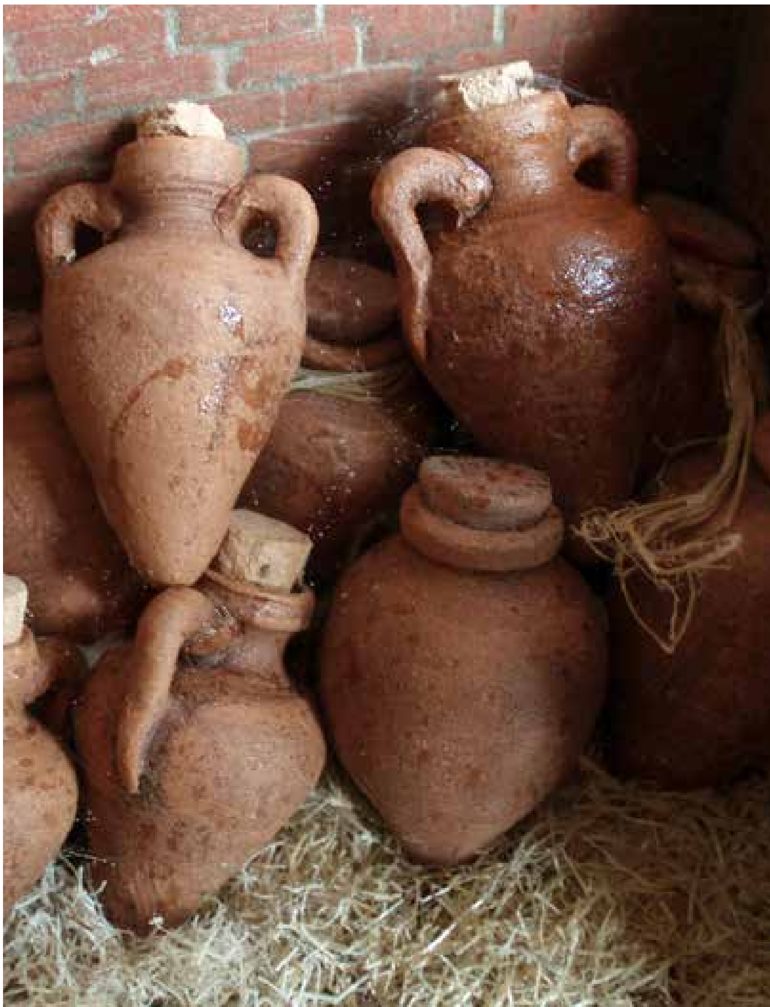




Domus and the underground tunnel. Anyway, it will also be partially visible from the other openings, including the window.

After removing them without altering their position, I replace the amphorae by applying glue to the less visible areas and removing excess. To make sure that the gluing is definitive I also give a splash of spray glue, obtaining an involuntary spider web effect. Of short duration, unfortunately, but very suggestive.

At this point I've finished the work and I'm going to dedicate myself to something else, when



a furtive movement near the amphorae attracts my attention. I approach the side arch to take a look inside... and I'm amazed! I should have expected it...

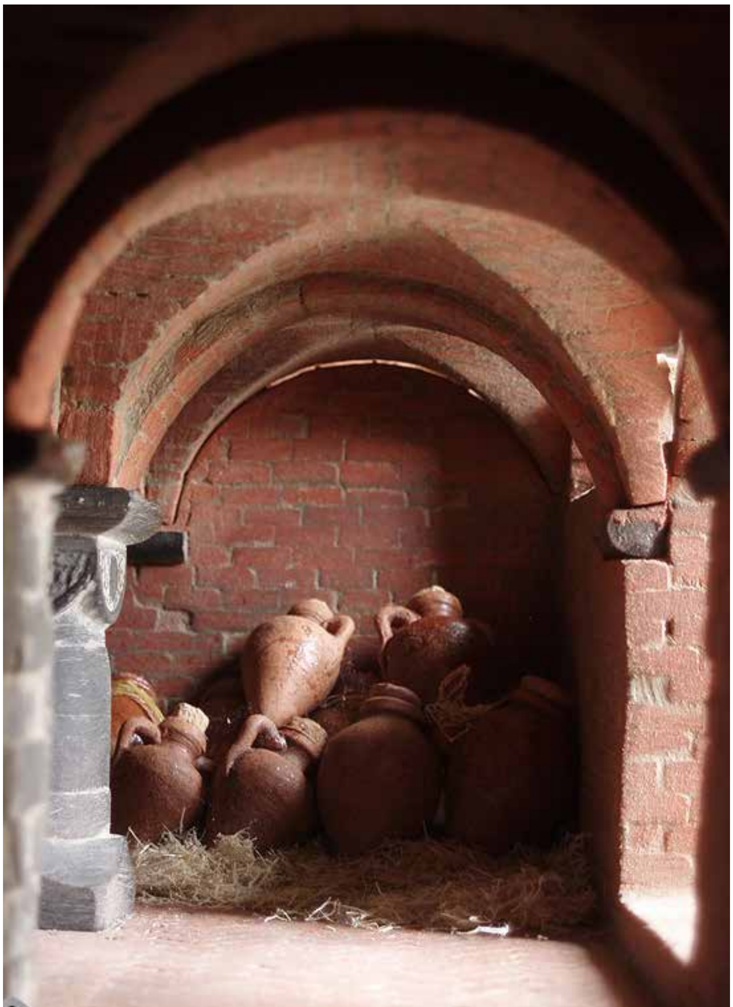
How could such a well-stocked pantry in an open construction site go unnoticed by rats? Somehow I'll have to remedy this situation.

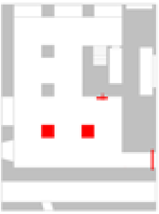
If only there was a cat around here...

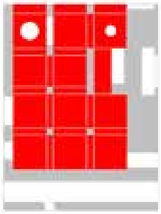
SIZE:
amphoras: ±25
lidsi: 5 x 2
corks: 3 x 4
rat: 8

MATERIALS:
terracotta amphoras, hemp, Das clay, cork, vinyl glue, spray glue, lead rat

TOOLS:
tweezers, putty knife, clay modeling tool, scissors







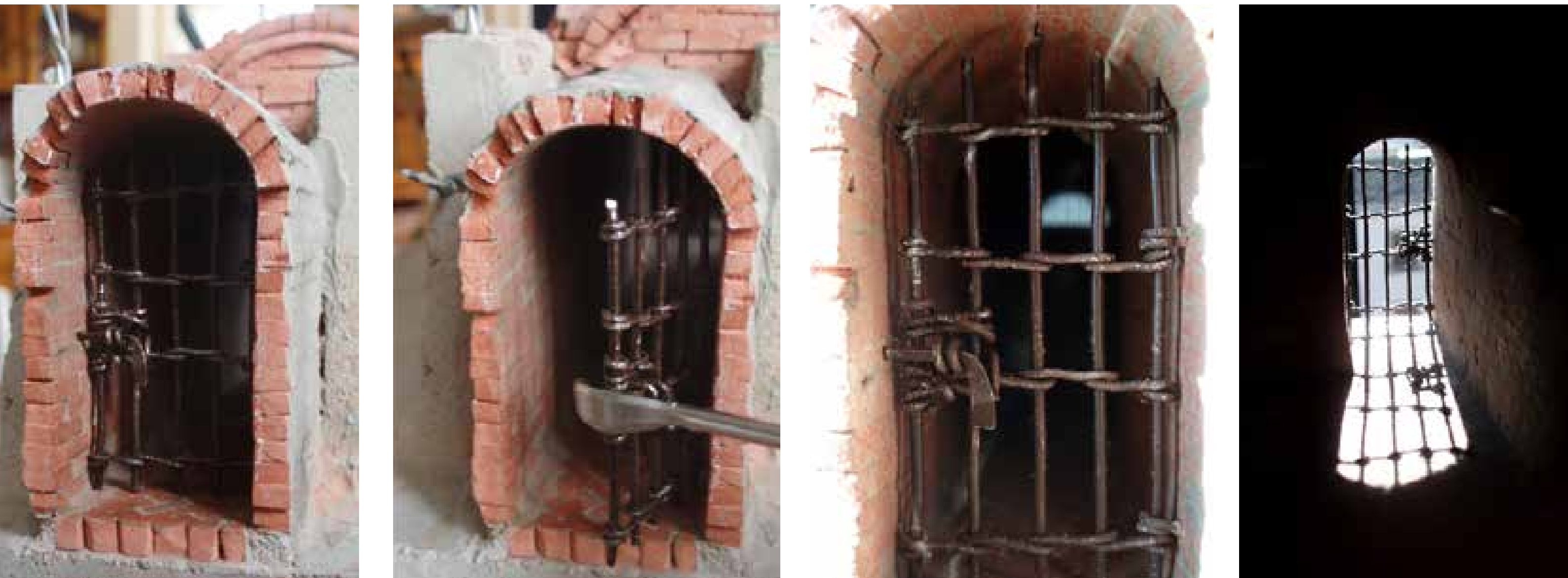
Chapter 27

Last minute changes and CLOSING of the CELLAR

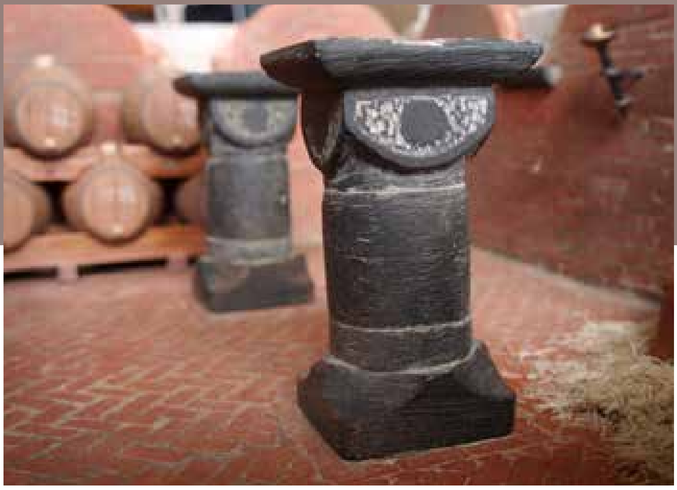
We're almost at the end of the journey. Or rather, at the end of the first stage, since the work is just at the beginning. Nonetheless, the time for the final closing of the basements is approaching, and after that it will no longer be possible to make big changes to the structures, although in some cases they're necessary due to "technical" needs or historical / architectural coherence. Here they are described in a random sequence.

The Gate *(see chapt.16)*

As it wasn't fixed to the wall yet, I removed it during the painting of the cellar so to make the

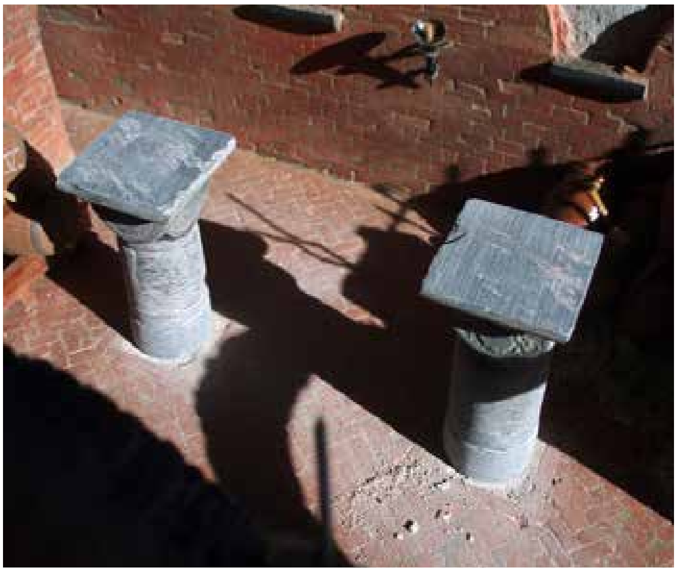


movement of the brush easier. Now that I mount it again, I realize that leaving it where it is, it would be impossible for me to open it manually by using the bolt. So I make new holes at the outer end of the tunnel (closing the previous ones) and I place it there.



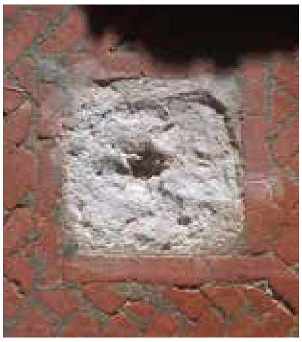
Actually it doesn't make much sense that bolt on the outside, but now it will be possible to open the gate with a finger or with the help of a hook to look inside the cellar.

The Columns *(see chapt.17)*

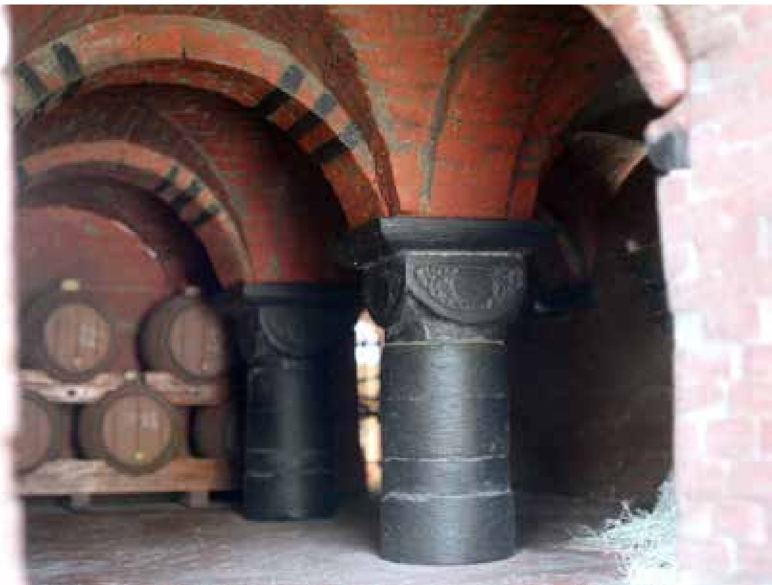


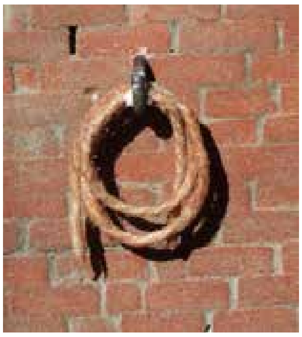
Despite the changes already made, I was still feeling like I was building an out of context element. This brought me to the decision to put my hand back on it. After working to eliminate the bulging of the shaft and "medievalize" the columns, I grouted their surfaces to fill the joints and painted them with a coat of transparent varnish. Rather than painting, this is a real "dirtying" aimed at avoiding the shiny effect and unifying all the different parts.

Now I bring the columns back to the construction site (detaching them from the floor where they were already glued), this time to completely eliminate the base and extend the shaft to the ground. Consequently I must also work on the floor to hide the signs of the operation.



The reasons for this further change are mainly two: the first is an underlying dissatisfaction that I felt by looking its shape, that in my opinion was too squat. The second, the advice given to me by a friend, expert in medieval structures, who responding to my request told me that columns with such an elaborate base would be more suitable for a loggia or a noble floor, rather than for a warehouse.





To proceed with the material changes, I work on the lower block with files and sandpaper until it gets a cylindrical shape with the same diameter as the shaft. In this way I not only solve this inconsistency, but I make the whole column slender and lighter (in any sense).

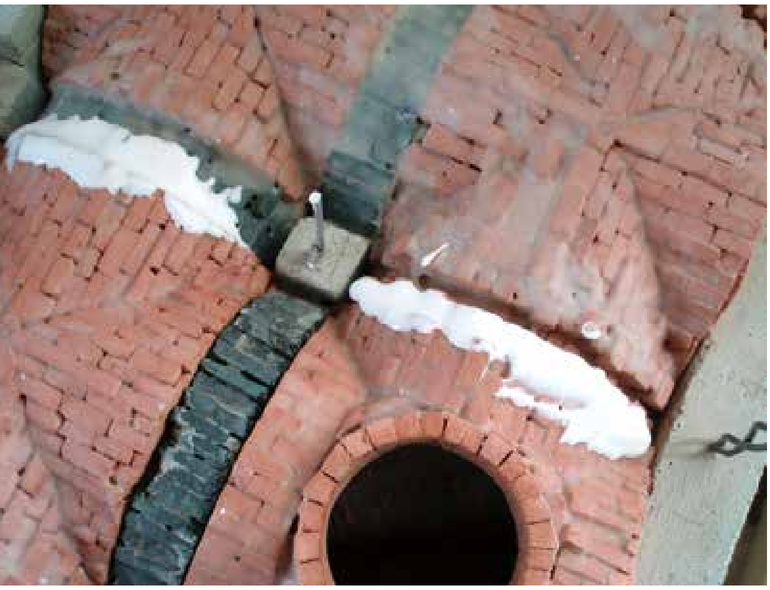
The Vaults *(see chapt.14/15-20/22-32-33/34)*

I take advantage of the changes to the columns to retouch the joint between the vaults and the capitals, adding a little clay where it's not perfect.

The Rope *(see chapt.23/24)*

With a string detached from a dress label, I make a small rope to hang it on the cellar wall next to the barrels. I'm not clear what its use is, but it's an explicit request from the client and I certainly have no intention of arguing over a rope.

To make it stiffer and darker (the string was white) I wet it with the paint used for the walls and then I turn it between my fingers with glue. Another drop of glue allows me to hang it on the new



hook inserted in the wall. Once dry, the glue will become transparent and will not be visible.And with that I should be done, so...

Closing of the basements

Here we are. After one year and a half from the beginning of the works, the time has come to lay the vaults and close the cellar, the pantry, the prison and everything located on the underground level of the Domus once and for all!

The vaults and the arches covering part of the rooms are already assembled and ready to be definitively mounted, while the rest is divided into three parts. My first task in this last phase will be to combine the pieces into a single block. It's something that I've done before, so I'm not going to explain it in detail. The problem is still the same: one of the stone arches is already glued to the pillars and any adjustments will have to be made after installation.

The basement of the Domus are basically organized in two spaces: an elbow-shaped corridor that

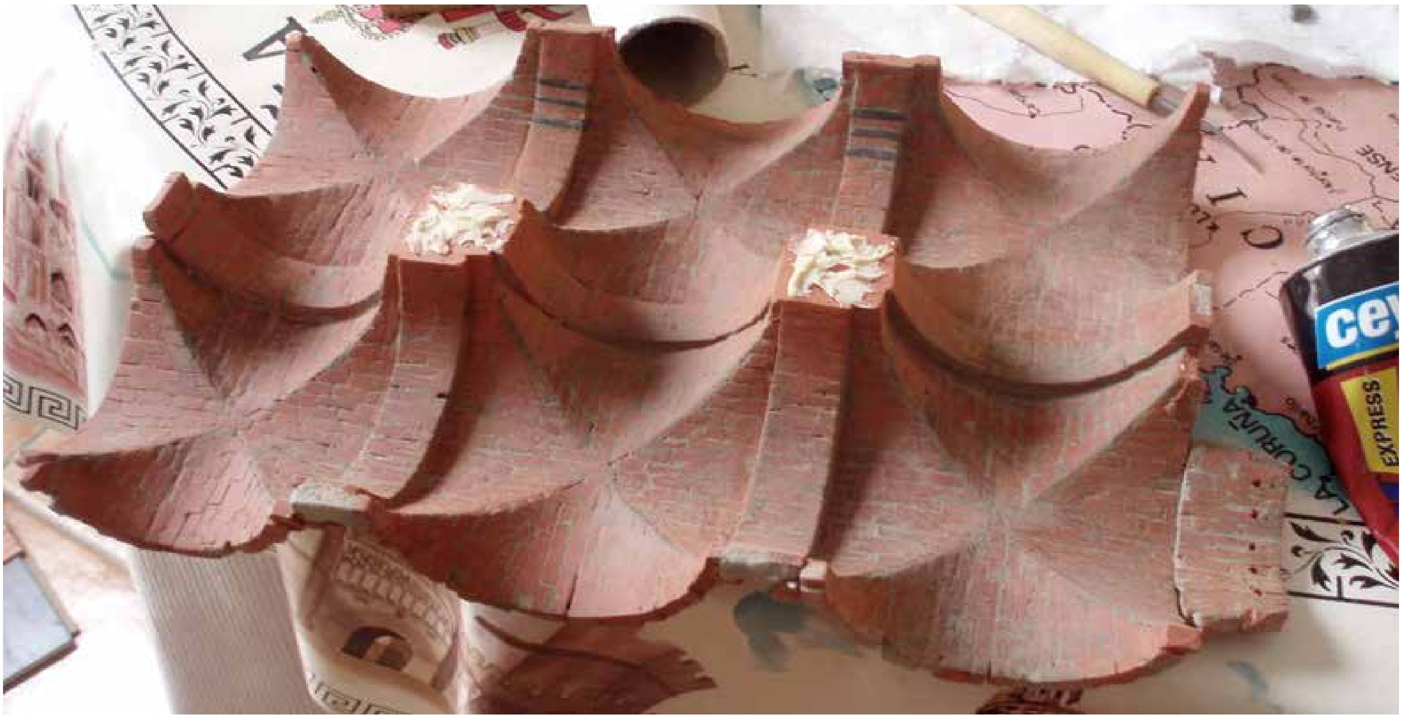
leads from the staircase to the side arch, bypassing the jail; Another room, larger and more regular, covered by six cross vaults resting on two short columns and which houses the cellar and pantry. At the bottom of this room there is a vaulted tunnel closed by an iron gate, while on the opposite side, immediately under the vault, there is a small window protected by railings.

In addition to these rooms there is another quadrangular space that houses the water cistern (which could also be an icebox) and the stairwell, both covered by barrel vaults. Just the coverage of the staircase will be the last element on which I'll need to operate to finish the work.

Here, however, a hitch occurs: the bricks that make up the arch of the door, built in the early stages of the construction, do not perfectly match those of the vault. This wouldn't happen in a real building site, where the vault and arch would be built together, but I had to assemble them separately in order to keep working on the staircase and I didn't have the foresight to check the joints between the two brick "hinges" from time to time.

Once I notice the problem and after examining the possible solutions, I decide to take a nice poetic license taking advantage of the momentary absence of the client. I take a small amount of clay and use it to create a more uniform joint between the two pieces, previously moistened with a wet brush.

Before finally laying the cover, however, I still have to give the finishing touches to the stairwell. After the usual cementing and painting, I put the vault back in place and sand the intrados of the arch, where some dry clay has accumulated. To



protect the staircase from dust I cover it with an aluminium foil, pressing it to take its shape and not slip off.

I'm dusting once again the basements (already finished) and I'll have to clean them up well. While working on the upper floors I'll have to study a system to prevent dust from entering the cellar, because once closed it would be impossible to clean it thoroughly. For now I solve everything with my new electric vacuum cleaner, bulky and noisy but effective.

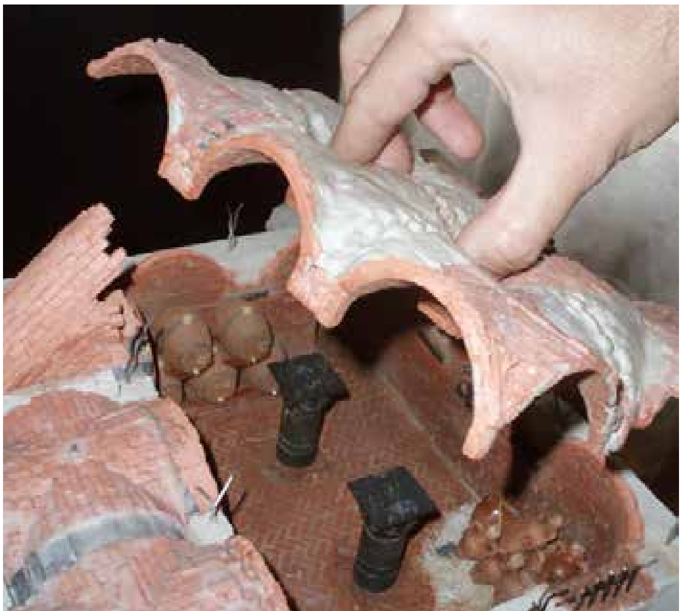
Once the cleaning operations are done, I'm ready to close the first half of the underground areas. I proceed by spreading a little glue only between the capitals and the vaults by dropping the piece directly from above into its final position. Now there's no going back. Even if I wanted to, once the glue had dried I'd not be able to detach the vaults without breaking them.

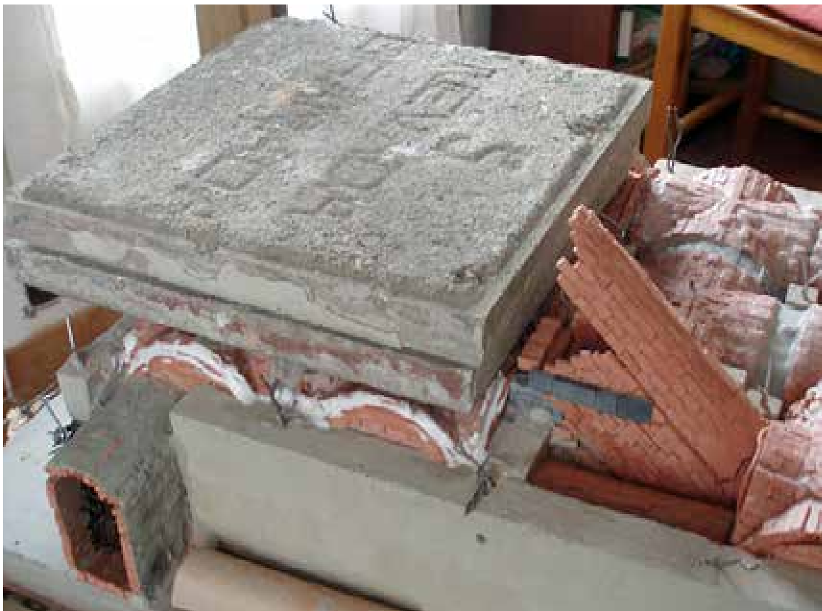
To definitively seal the cellar, I close the perimeter of the vaults with a long bead of glue and put them to rest for a couple of days under a uniform weight.

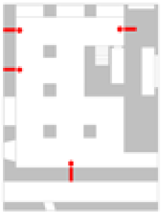
SIZE:
column shaft: Ø 19 x 36
rope thickness: ±1

MATERIALS:
Das clay, iron wire, string, transparent varnish, water, glue

TOOLS:
tweezers, pincers, brush, putty knife, aluminium foil, sandpaper, files, hand vacuum cleaner, 2 old floor tiles







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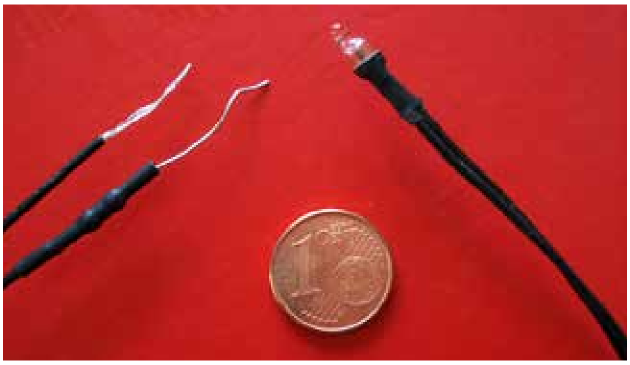
Chapter 28

ELECTRIC LIGHTING



Let’s take a step back to when the basement was still open...

I had been thinking about this for a while and finally I’ve decided: I’ll light the interior of the cellar with a real electrical system.

At first I’m not very clear how to put this idea into practice, because it would force me to work not only on the installed torches but also on the brick walls and reinforced concrete structures, with consequent scattering of dust (the prison and the pantry are already finished and furnished). In addition, I’d need really tiny bulbs to keep the current look of the rooms.

It’s mid-December and full Christmas time, so it’s not so hard to come across the typical colored and intermittent lights that people usually place on windows and balconies. But that’s not for me, I want something more discreet that could remind to the flame of a torch. I’ve seen some nativity scenes equipped with very good lighting systems, and I’d like to make something like that.

After discovering on the internet that there is a large variety of micro-bulbs and neon lights specifically designed for nativity scenes, I decide to have a look in a shop where I already purchased some accessories and which specializes in artistic miniatures, dollhouses and everything needed for the nativity scenes. It’s located inside the *alcaiceria* of Granada, the city's bazaar in medieval times. The site still maintains the typical look of an Arab souk, although nothing remains of the original structure. It's more of an attraction for tourists hunting for souvenirs (or miniaturists hunting for light bulbs).

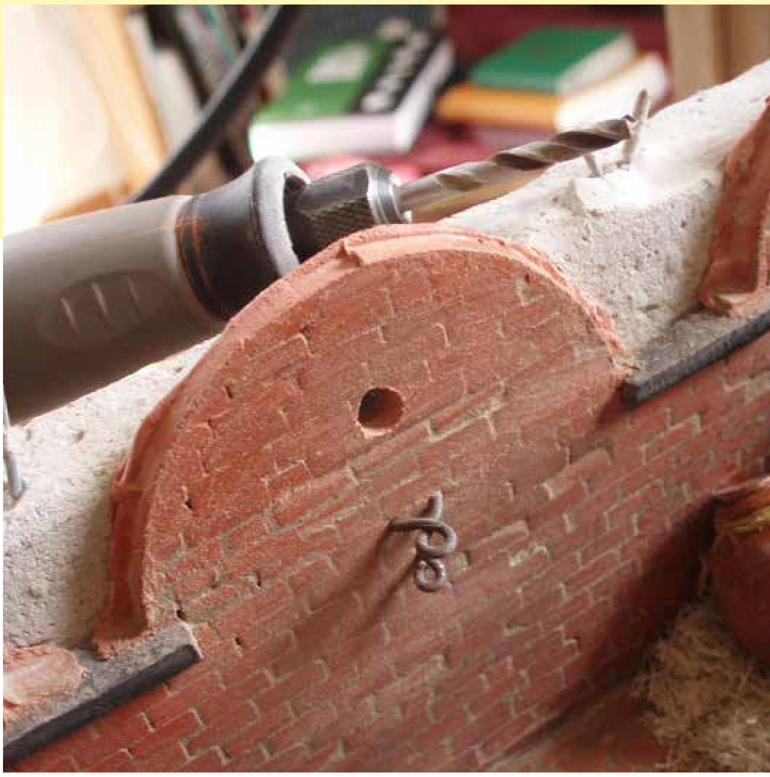
Convinced by their small size, I buy 4 neon lamps with a 4mm bulb. The shop owner kindly explains to me how to install them, and to my relief I find that I don't need timers, gearboxes and other devils. The bulbs, that already include a micro-resistance and a section of electric wire, can be directly connected to the main power through a terminal block and a very common plug, and their light is specifically designed to imitate fire torches. Better than this...

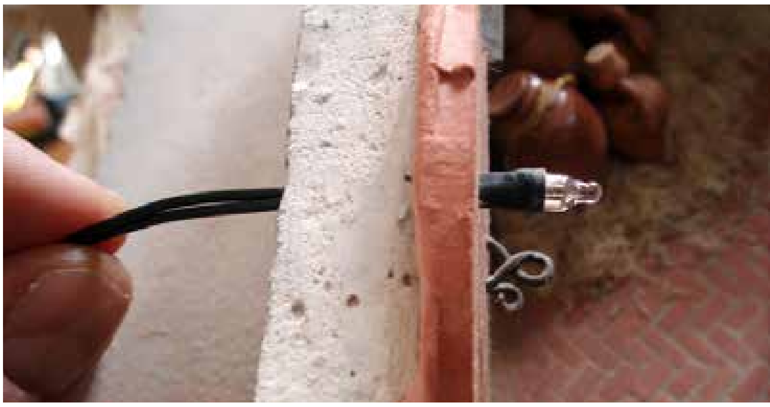
The most difficult part is obviously the assembly inside the Domus. I want to install the bulbs so that their light is immediately above the torches, and to do this I need to drill through the concrete wall. Another problem is access to the bulbs: I must be able to remove them in case of failure or malfunction.

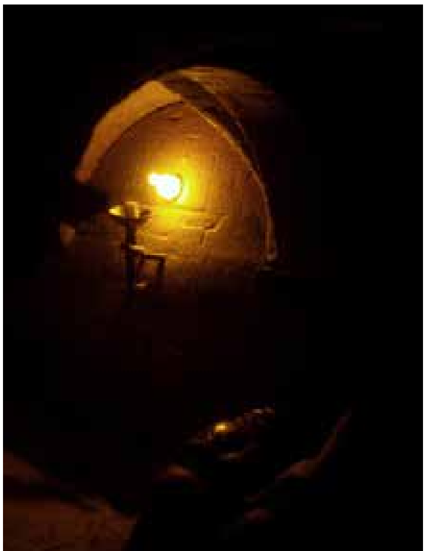
I open the first hole with the Dremel above the torch located behind the two columns and it's not that hard, because that wall is what remains of the very first concrete structure. Remember? The one that I removed almost entirely for its low quality (see chapter 5/6).

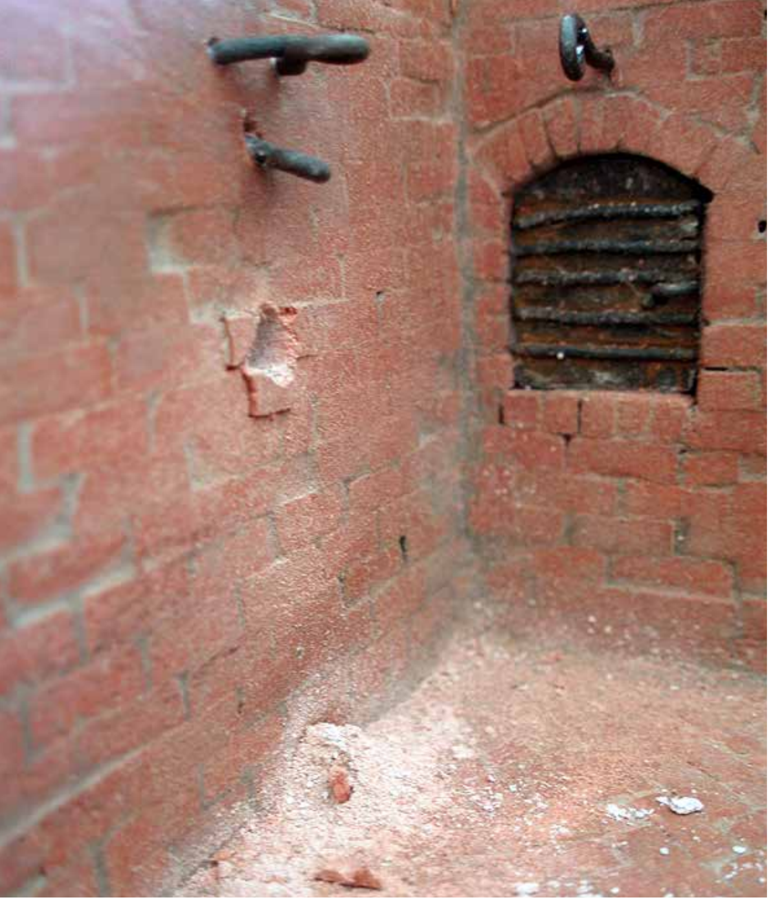
Despite a certain consistency, it is definitely easy to drill and the dust comes out on the outside, saving the cellar from possible disasters.

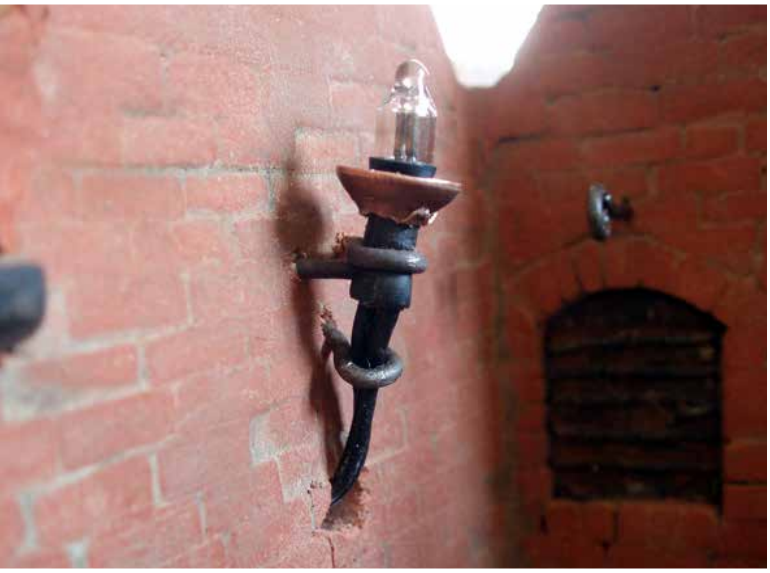
When the hole is large enough to allow the passage of the bulb, I connect the wires to the current and make a first lighting test.











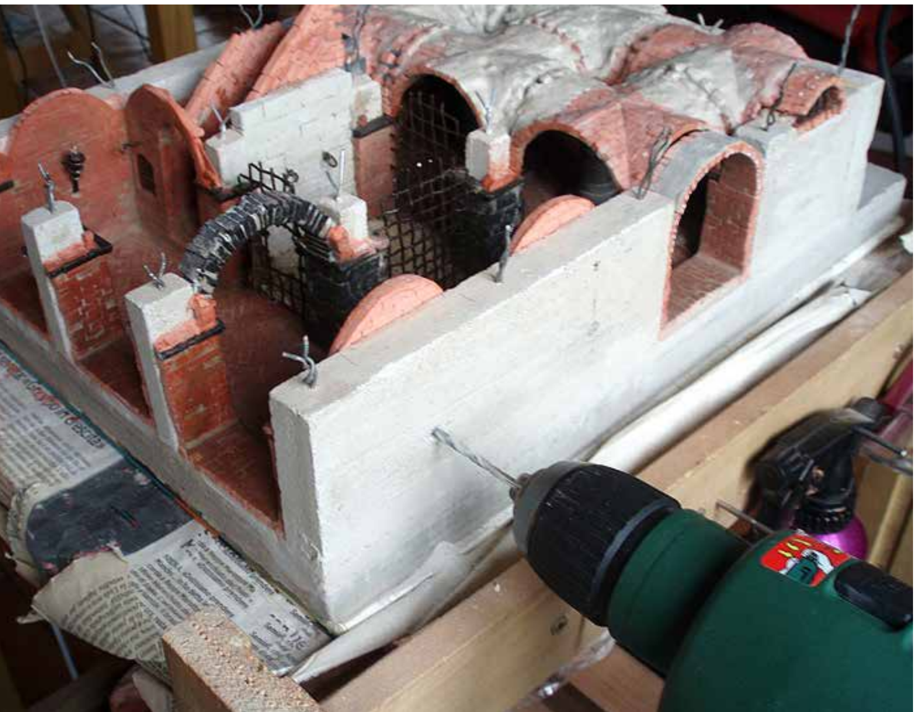
I like the overall effect, even if that light bulb that comes out of the wall doesn't give much the idea of being the flame of the torch. At this point I'm reminded of a tutorial found on the internet when looking for information about lighting in the nativity scenes. It's a simple way to make wall torches using micro-neon lights like mine. Doing it this way would mean removing the torches I previously made (see chapter 23/24), but the result may be worth it...

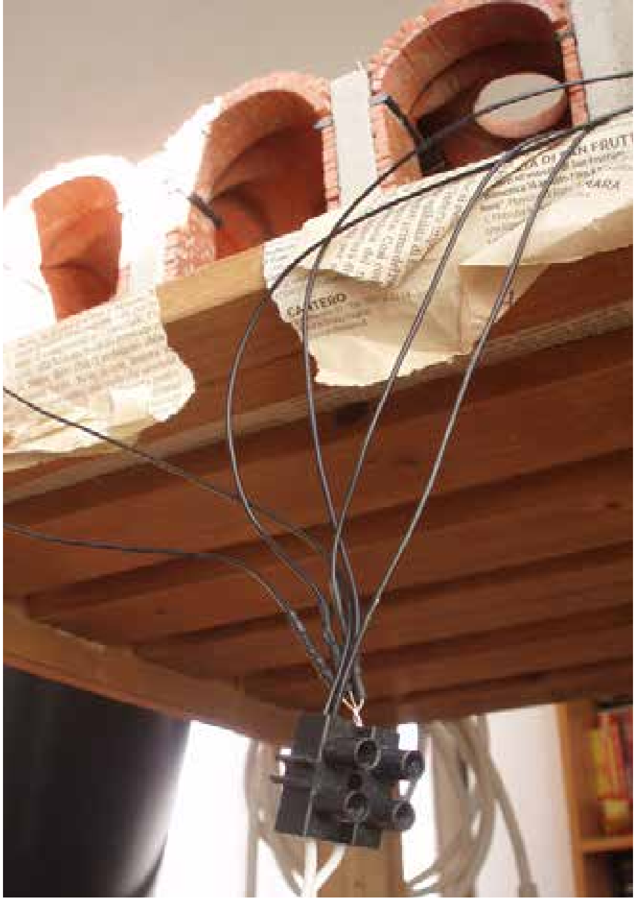
But now I'm going to work on the torches placed in the back side. As I suspected, in this case the drilling is much more difficult. So much so that at some point I put the Dremel aside and continue the work with the drill I use on my "real" walls. When the point comes out on the inside, some bricks pop out of the wall, but fortunately the drill has speed control and this allows me to avoid greater damage. The dust, on the other hand, cannot be avoided.

At the end of the bulb I insert the small metal cup of the old torch (to which I enlarged the hole) and reassemble everything, rebuilding the damaged wall as best as possible.

At first I place another bulb in a horizontal position. This is because, like the first one, the torch is installed in a more difficult place to reach from the outside.

However, it doesn't make sense that the bulbs are placed in a different way, so in the end I mount it like the others, but without gluing the iron pieces





to the wall. For any replacements it will be necessary to detach them, remove the cup from the bulb and recover the latter by pulling on the wire.

I'd have saved myself so many problems if I had planned from the beginning such a lighting system!

As for the laying of cables, on the two sides where I'll build the subsoil of the alleys, they'll reach the outside by passing through plastic pipes that should allow their extraction without problems. For this reason, the first bulb installed will be the only one to keep its horizontal position above the old torch. In that case it's not possible to insert a pipe in the right place because I've planned to build a...

But that's another story!

MATERIALS:
4mm neon bulbs with micro-resistance, electric wire, terminal block, plug, switch, glue

TOOLS:
Dremel with mini-drill and flexible shaft, Black & Decker drill, tweezers, screwdriver, brush, sponge

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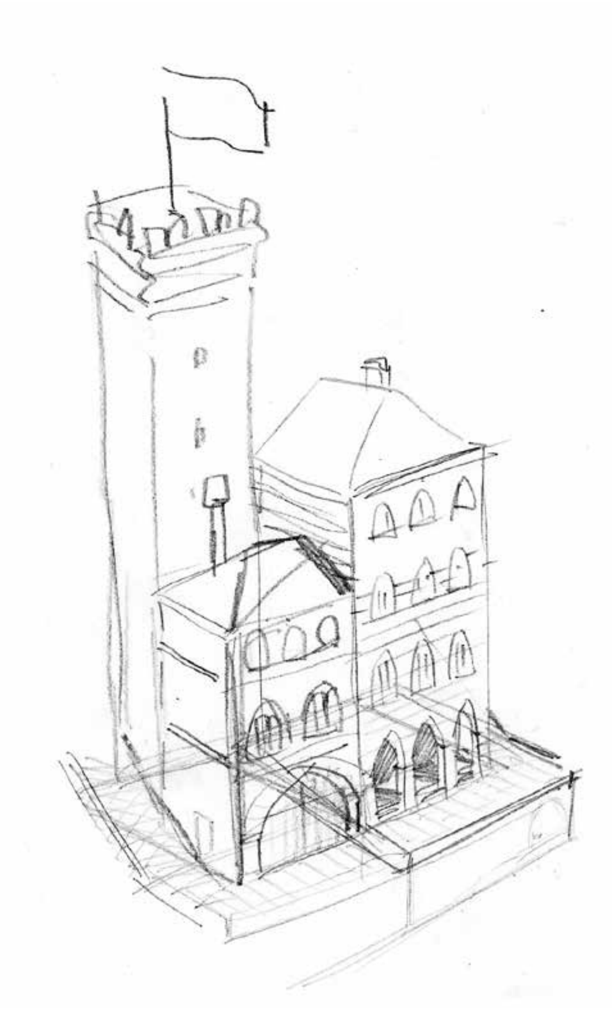
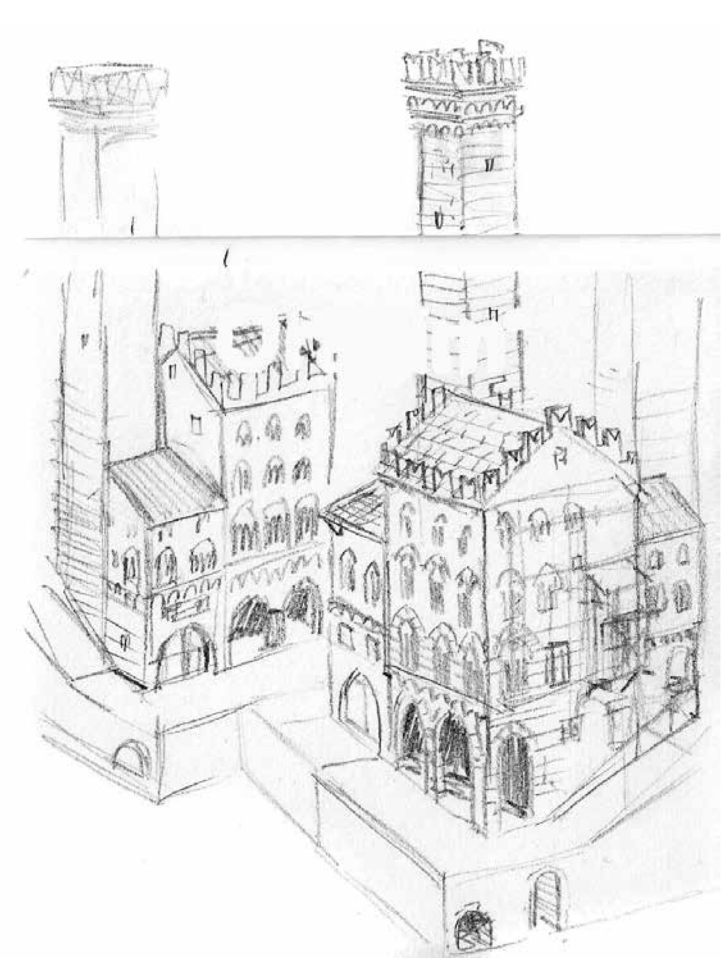
Appendix 1

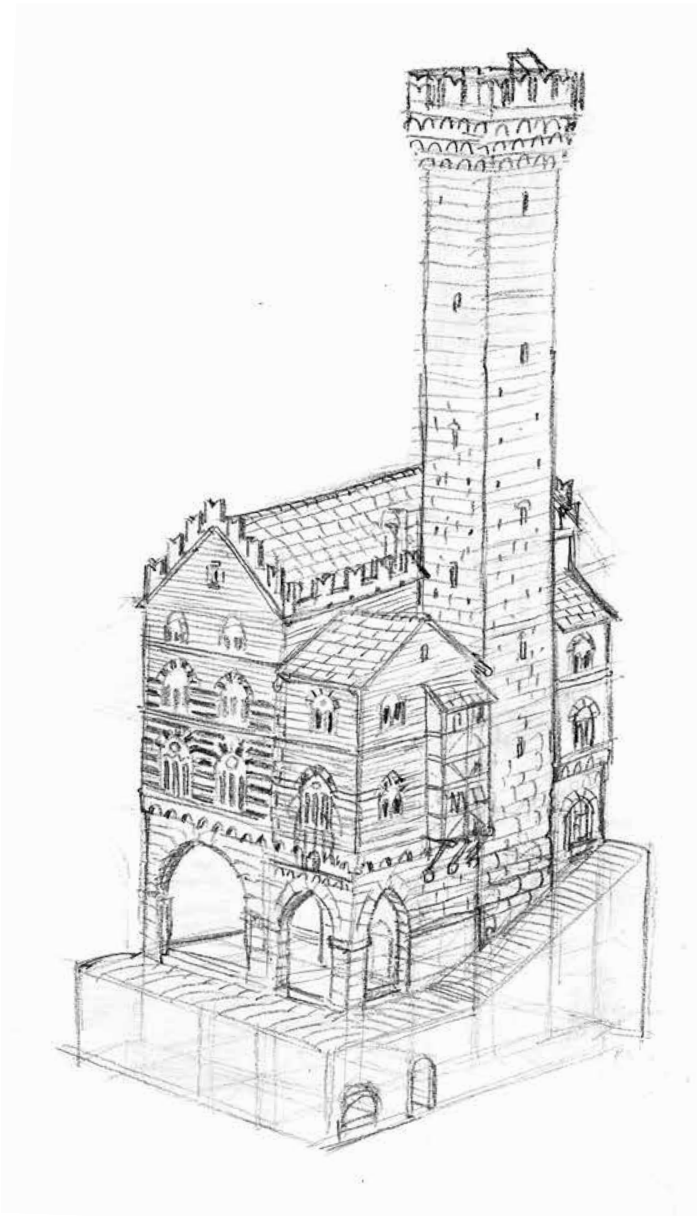
The PROJECT

First sketch of the project presenting separated elements. The basement built in this book would be the underground of the right building, which loggia originally opens to the street with three archways. Next to it there's another building possibly owned by the same family, behind which a high tower is set on its own base.

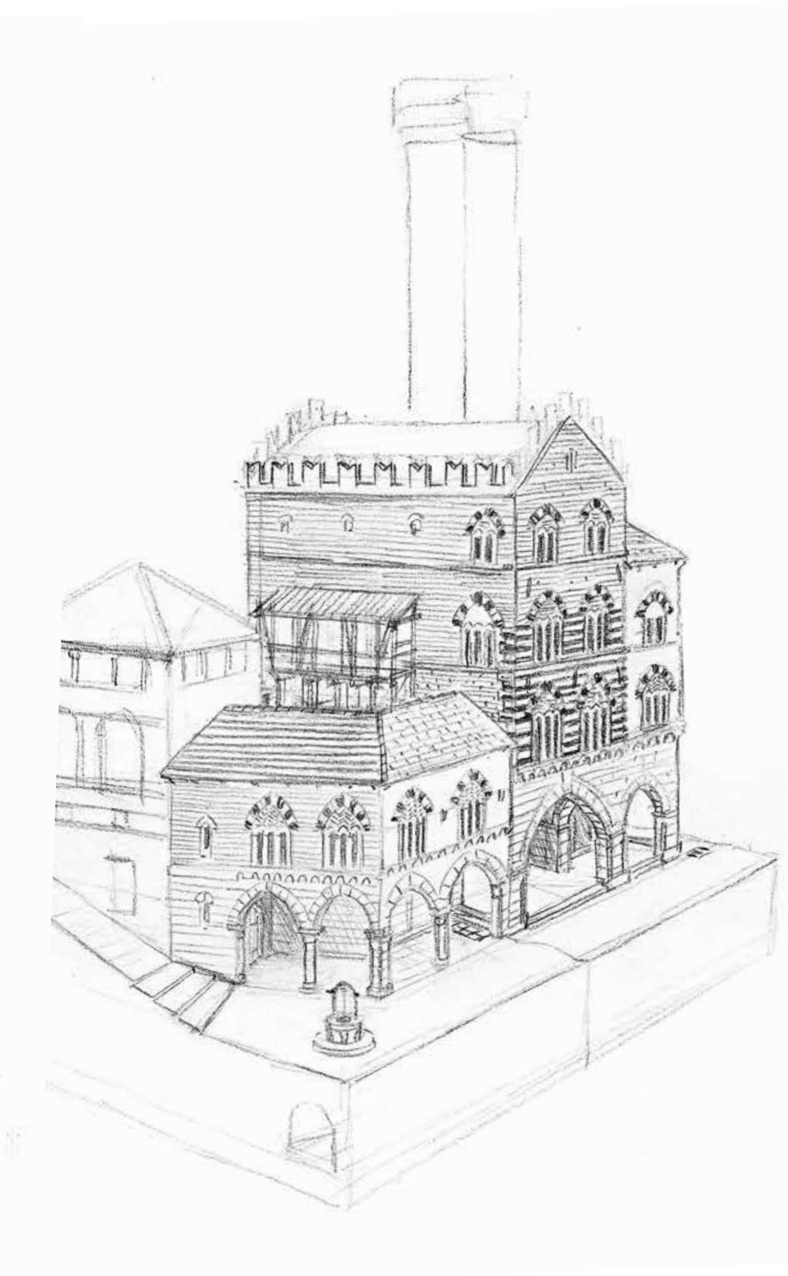
More sketches made on twopost-it notes. The right one repeats the three pieces structure of the previous drawing, while the other presents the single base solution, on which three different volumes take form. The loggia now has two arches.







Reworking of the previous project where the tower (more slender) finds its final position. The openings of the loggia remain two but change in size, while the volumes of the buildings are revised again. A steep alley runs along one side, giving access to a smaller house (part of the same complex?). Among other things, the hypothesis of overhanging wooden structures takes shape, barely sketched in the previous drawing.



Another point of view of the same complex, where I foresee the presence of other adjacent elements. The overhanging structures also appear on the opposite side of the Domus, taking the form of balconies, which probably overlook a courtyard hidden by the corner building. Other elements, such as the tower house and the well in the center of the road, are simple working hypotheses and will not be further investigated (for now).

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Appendix 2

PLANS & 3D

Definitive underground plan:

1 - Underground tunnel (brick structure, barrel vault, iron gate);

2 - Window closed by railing;

3 - Side arch;

4/5/6 - Back wall (this side will remain open on the whole building);

7 - Water tank;

8 - Staircase to the ground floor. The tower will rise above this area;

9 - Prison, closed on three sides by railings and on the rest by a stone wall;

10 - Communication hatch between the warehouse and the cellar (closed by an iron grate);

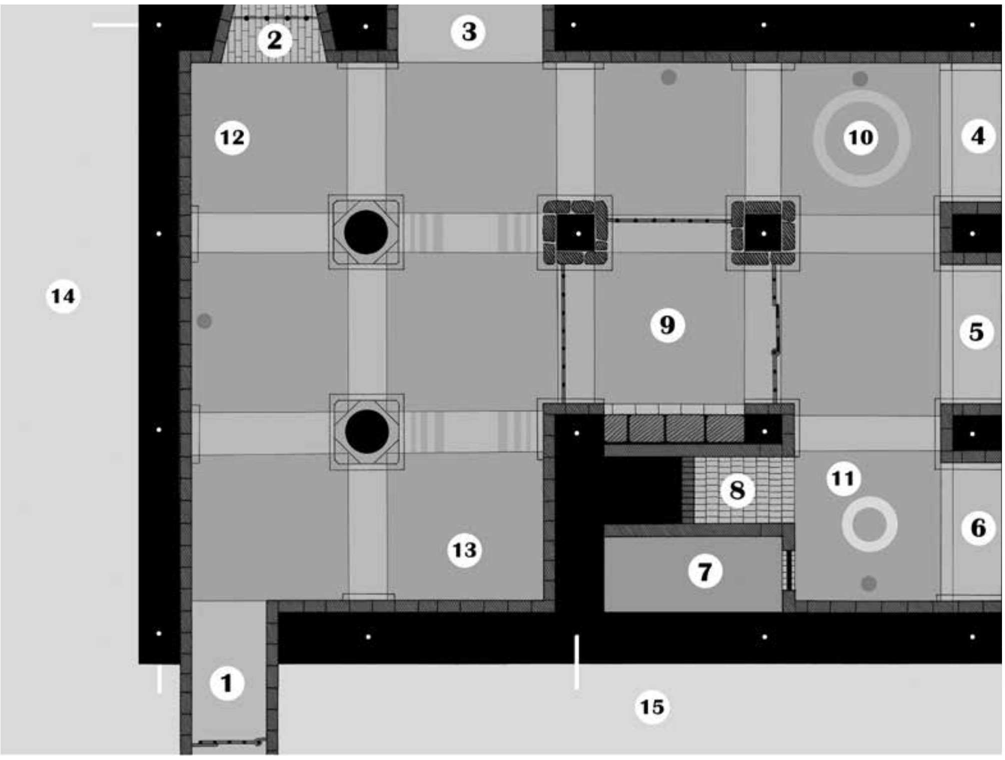
11 - Trap door for water supply;

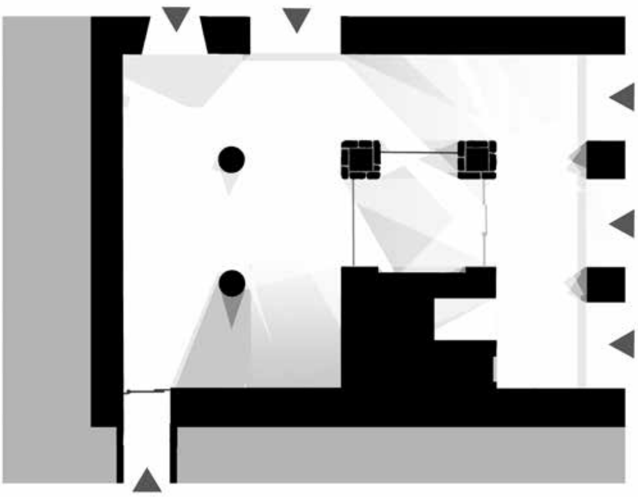
12 - Pantry;

13 - Cellar;

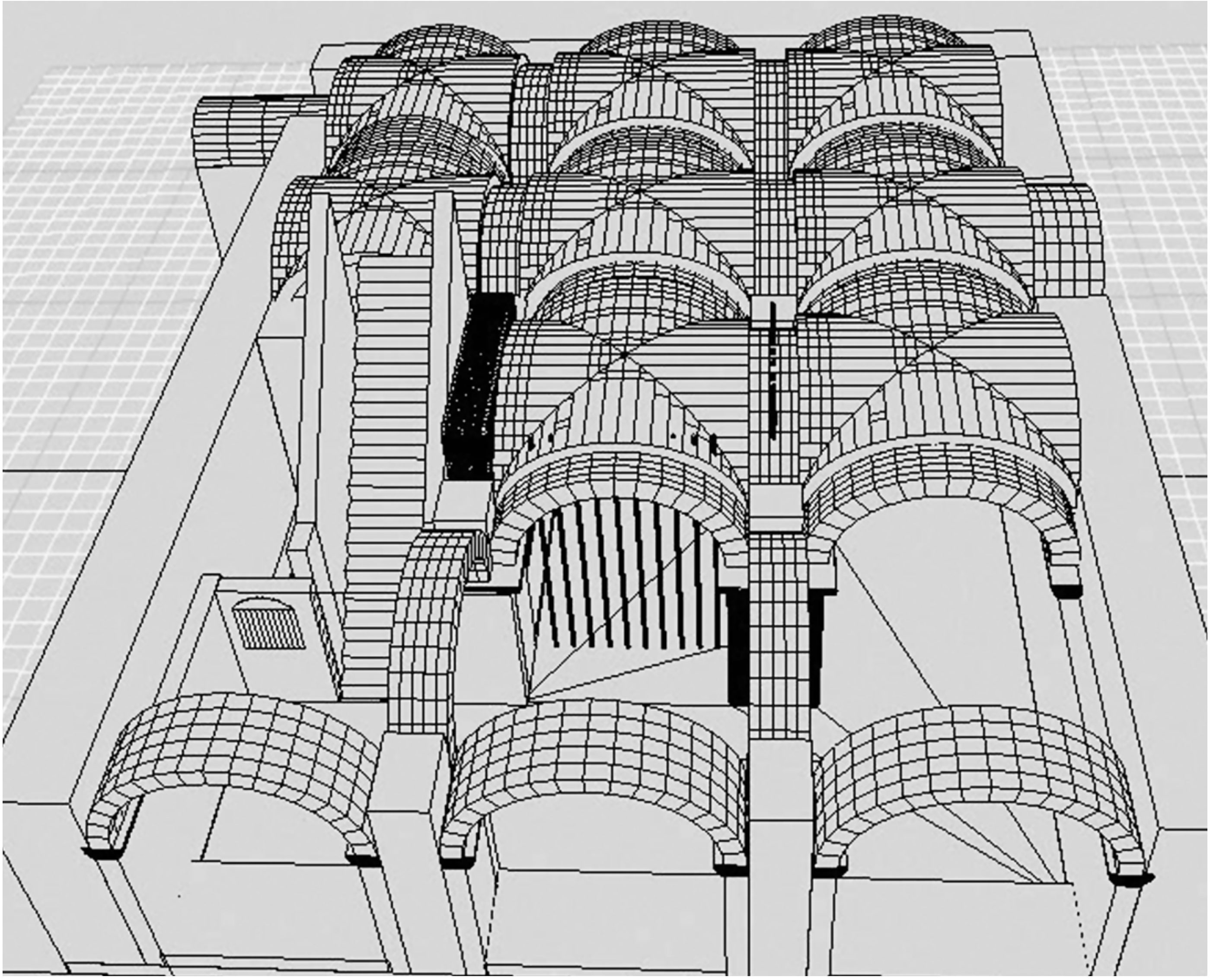
14 - Underground of the street in front of the building;

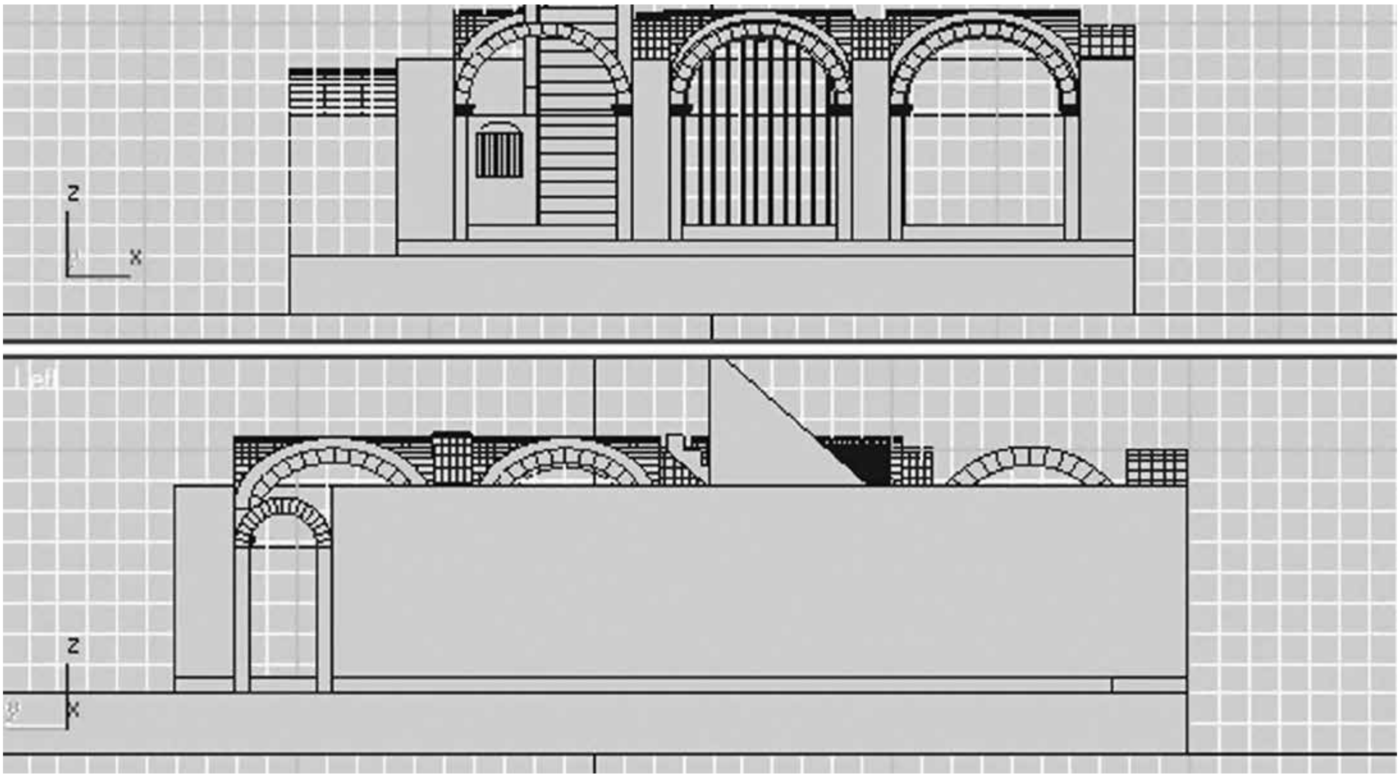
15 - Underground of the alley.





On the right: Study for the interiors visibility, made on the previous plan. The darker areas are the less visible. I'd say the best place to hide is between the wine barrels and the first stone column.

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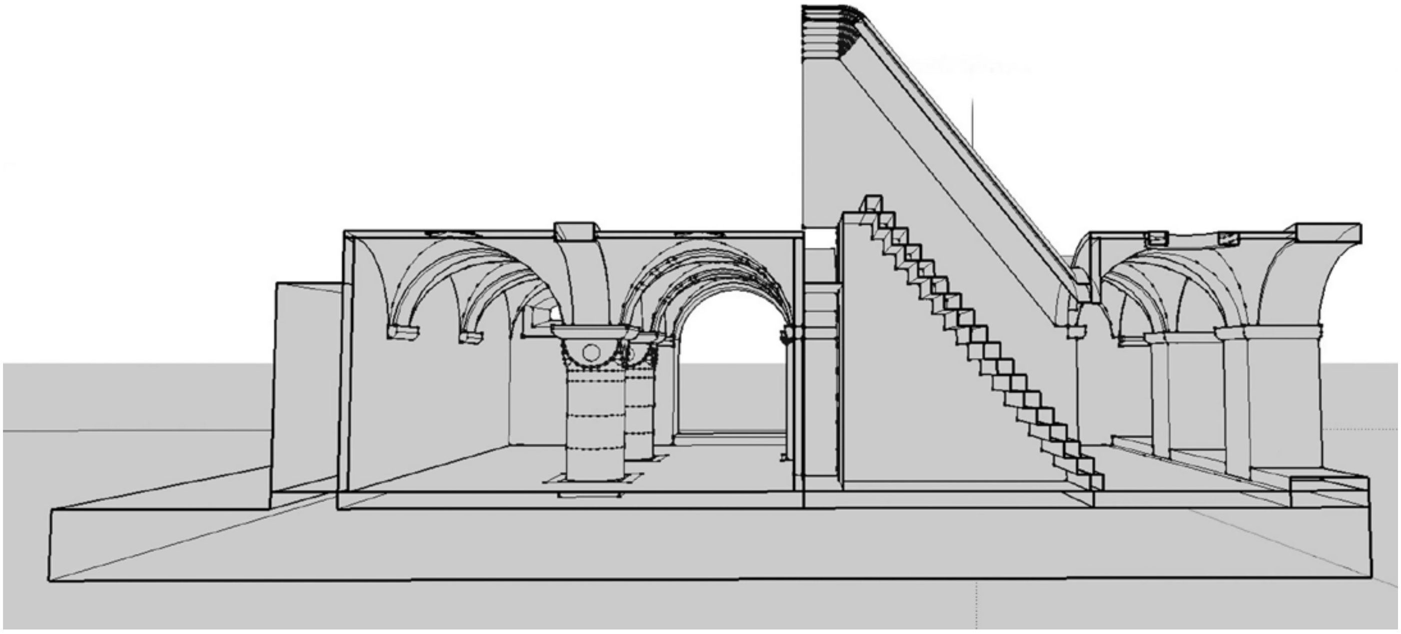

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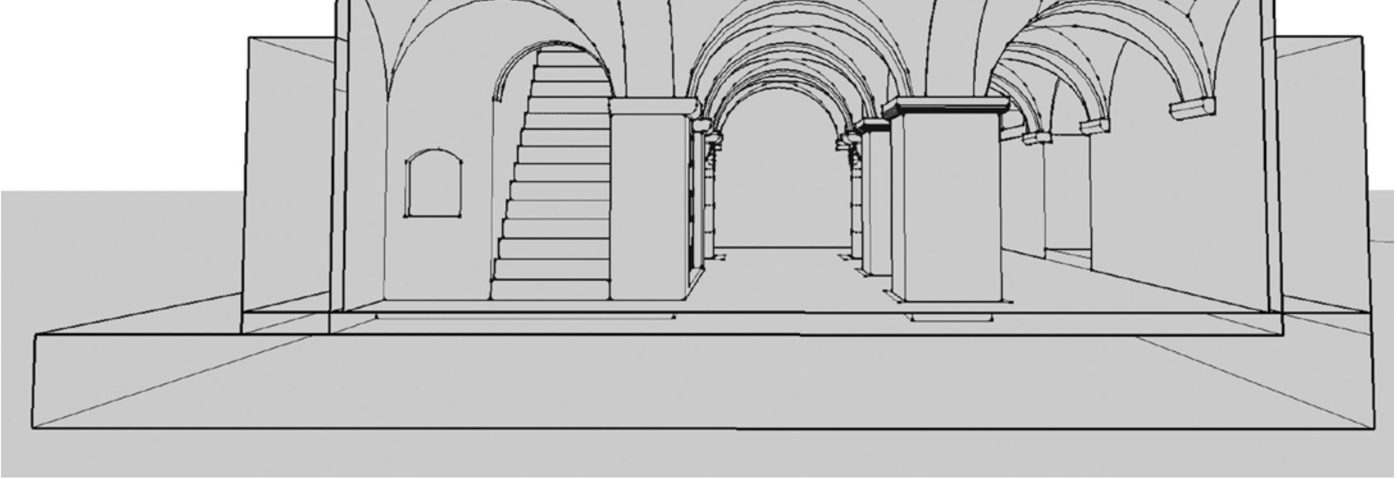

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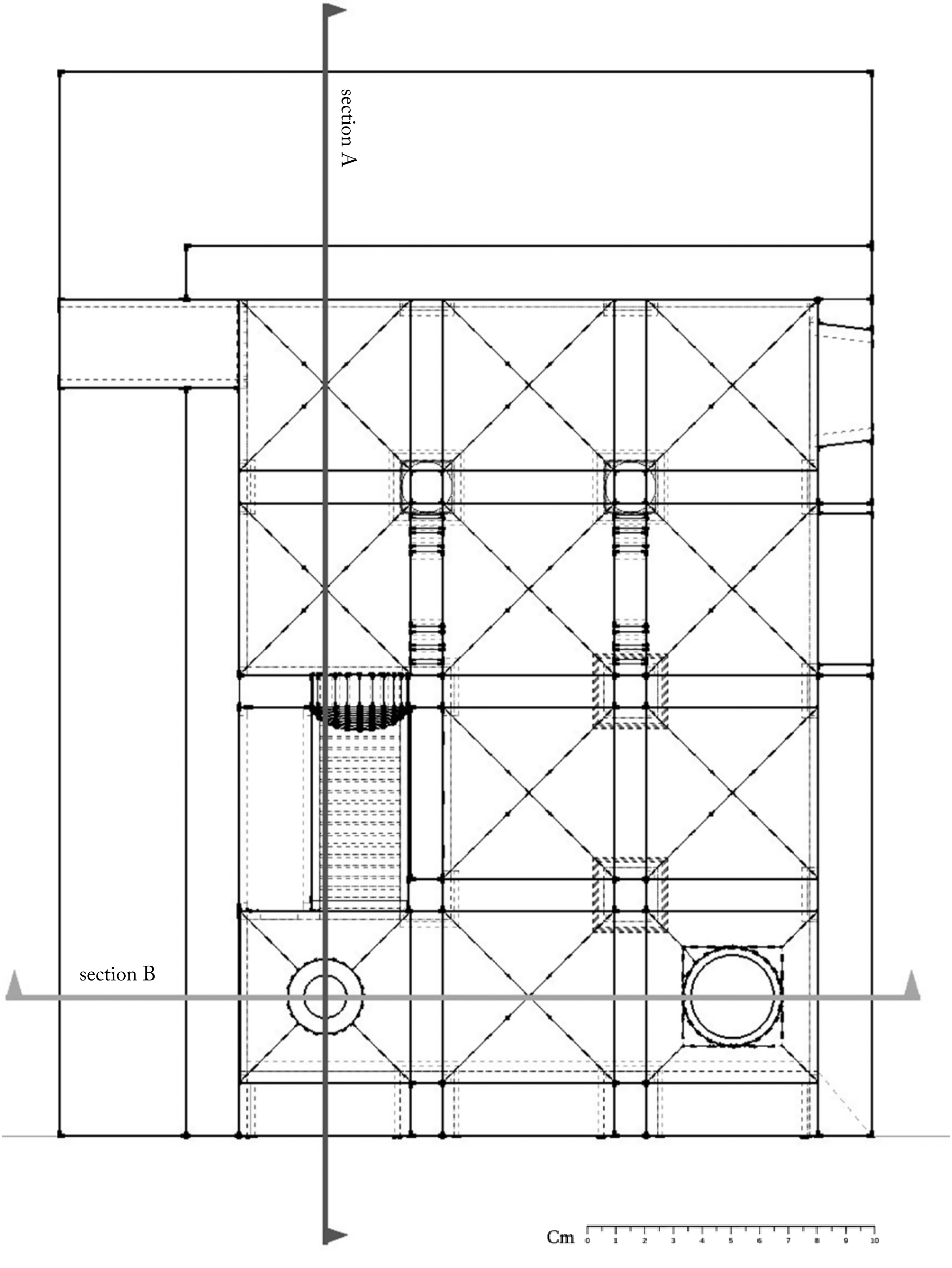
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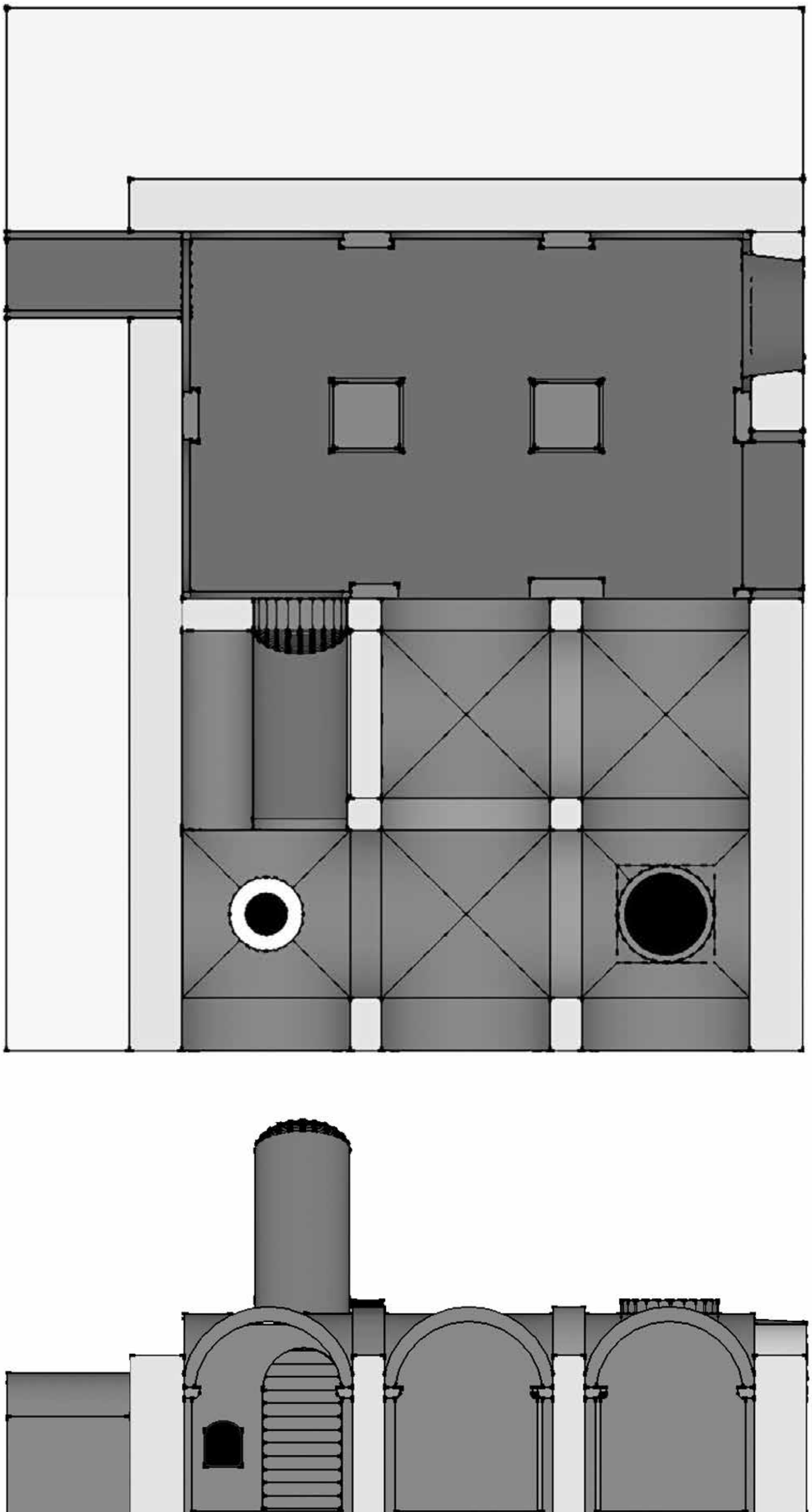

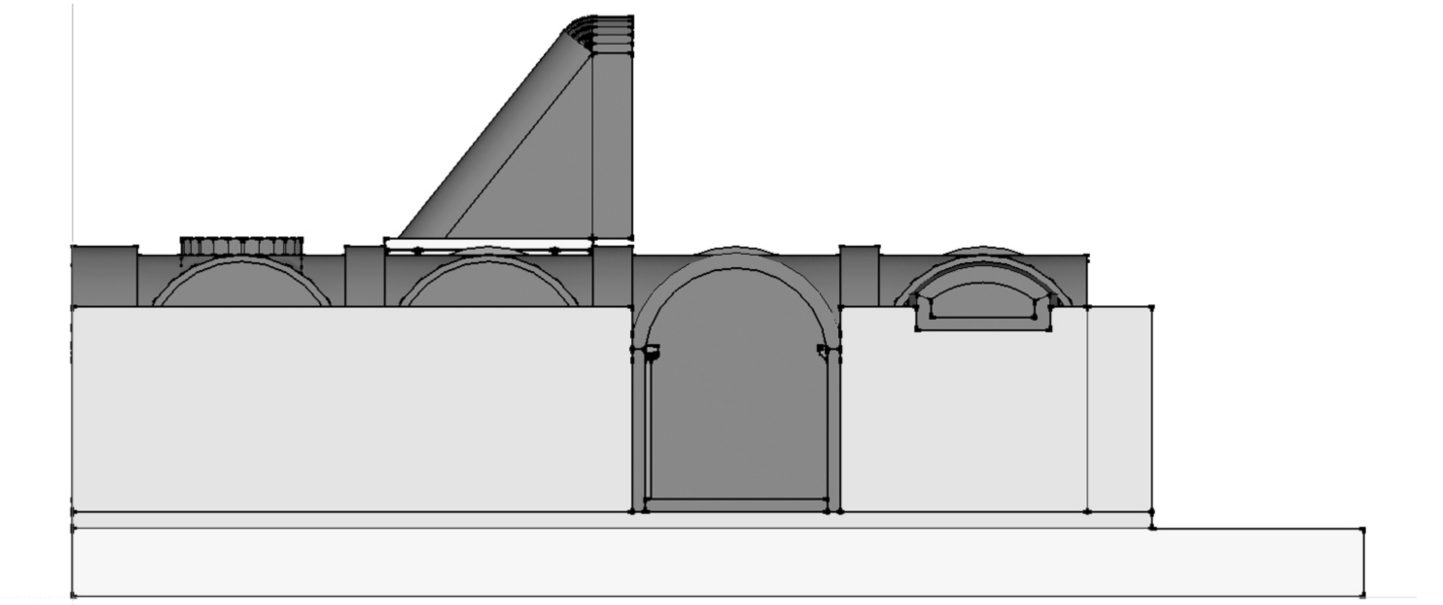

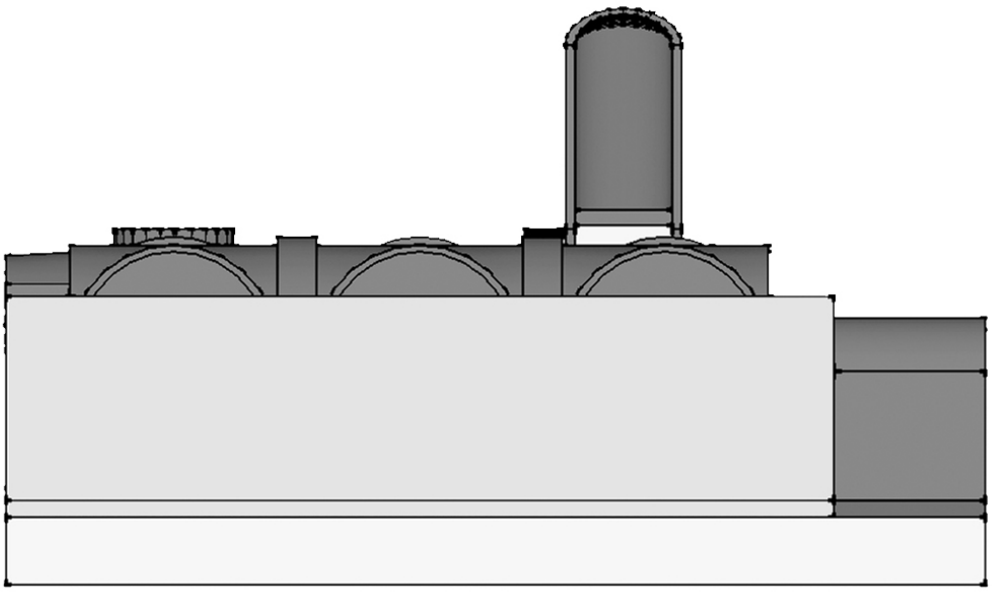

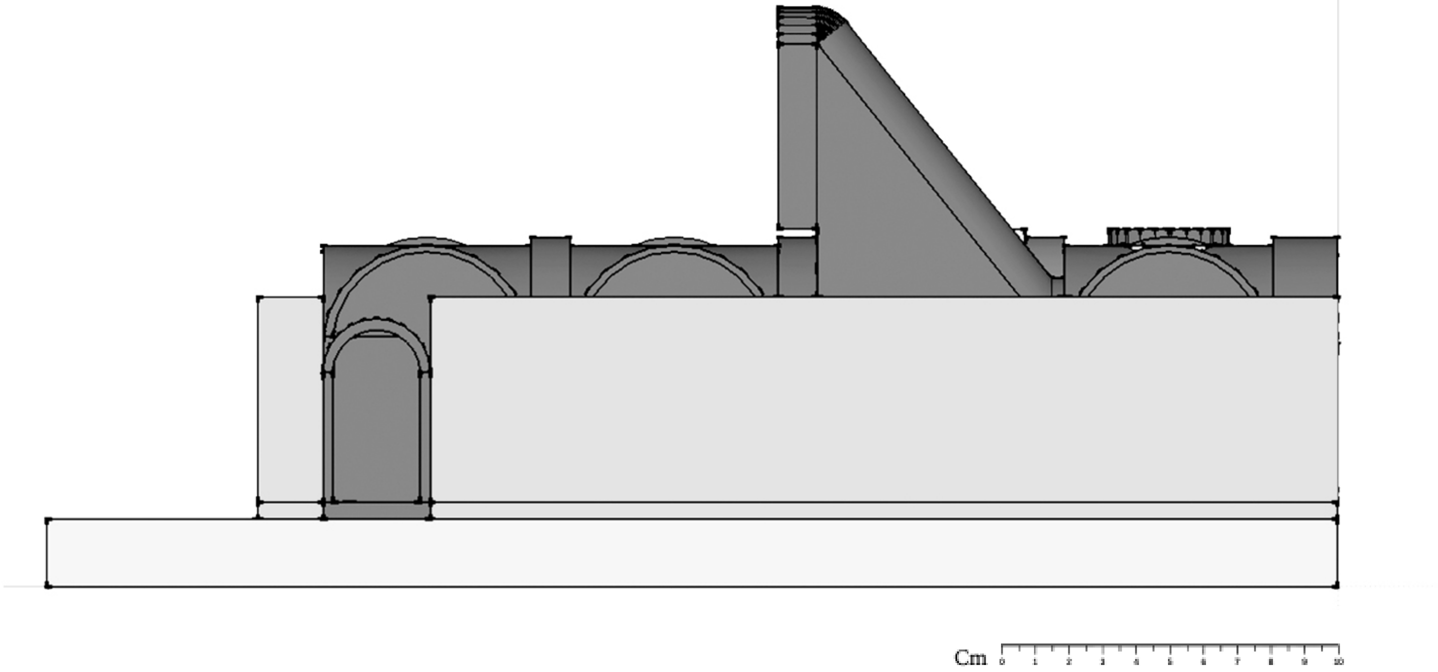
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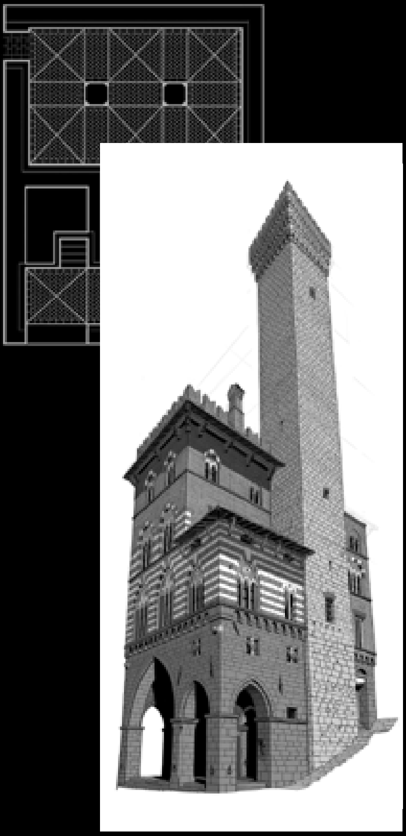
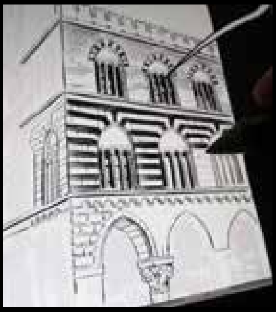


THE DOMUS PROJECT is the 1:50 scale construction of an imaginary 14th century palace. Since 2019 the work is told in every detail in a sort of diary for all patrons on Patreon.com. This first volume collects the chapters wrote about the construction of the basement, from the concrete base to the brick vaults, entirely revised and with the addition of extra content.



WERNER MARESTA was born in Genoa in the late 20th century. At an early age he finds a way out for his constructive impulses by assembling and disassembling several Lego kits, until he temporarily put aside the construction to start drawing comics. However, after a few years, the uncontainable impulse for the collection of apparently useless materials brought him back to combine this passion with the interest in the history and architecture of his hometown, giving him the excuse to keep collecting any garbage undisturbed.

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